ENVIRONMENTAL ASSESSMENT
for
STICES GULCH INTERFACE
FUELS REDUCTION PROJECT

T11S, R40E
Portions or All of Sections
5, 6, 7, 8, 9, 18, 19, 20, 29-32
T11S, R39E
Portions or All of Sections
13, 24, 25, and 36
Watershed 1705020325 (Powder River – Salisbury)
Subwatershed 25I (Stices Gulch – Moonshine Creek)
Subwatershed 25H (Denny Creek – Rancheria)

Baker Ranger District
Wallowa-Whitman National Forest
USDA - Forest Service

Baker Resource Area
Vale District
USDI - Bureau of Land Management

Baker County, Oregon

CHAPTER I – PURPOSE OF AND NEED FOR ACTION

A. BACKGROUND

Wildfires in recent years culminated in the year 2000 and 2001 with severe impacts to public and private land resources, especially to rural communities, across the West. For 2001 and subsequent years, the President asked for budget and actions to support recommendations to reduce impacts in the future. Congress, with the support of the Western Governors Association approved this plan, with Congress providing the needed increase in fire management budgets to begin to address the problems that were identified. The resulting plan is referred to as the National Fire Plan (NFP). The underlying strategy is called "Protecting People and Sustaining Resources in Fire-Adapted Ecosystems: A Cohesive Strategy."

The Baker Ranger District and Baker Resource Area are applying the strategy with the intention of:

- Improving the resilience and sustainability of forests and grasslands at risk;
- Conserving priority watersheds, species, and biodiversity;
- Reducing wildland fire costs, losses, and damages; and
- Improving assurances of public and firefighter safety.

High Priority Areas

The NFP outlined a priority hierarchy. High priority areas on public lands include wildland/urban interfaces, where flammable wildland fuels are adjacent to and in the vicinity of homes and communities and the forested landscapes nearby that provide for a forested setting; readily accessible municipal watersheds; and threatened and endangered (T&E) species habitat. Combinations of these priorities would generate the highest priority areas to manage for the intentions in the bullet list above.

The NFP places a greater emphasis on communities than on individual homes. A community is a defined area where residents live and are provided services such as fire protection, water, law enforcement, etc. A community could also be described in broader terms and can cover a large geographic area (categorized as an "occluded" community; see glossary). A high risk exists where there is land condition that is characterized by high-risk fire regimes, based on a Forest Service classification system (Condition Classes 2 and 3; see glossary in Appendix A).

There are no municipal watersheds within this analysis area (AA). There are also no listed species (plant, animal, or fish) known to be present, nor any that have habitat within this AA. However, this is an area of concentrated private dwellings and other improvements. Stices Gulch and vicinity are also part of an area where restoration activities have occurred over the years. Management activities have been designed to improve sustainability of the stands in warm/dry biophysical environments. The most recent project action on the part of the Forest Service in the vicinity of this area has been Rancheria (mid-1980s), Lower Montane (mid-1990s), and Sandshed (2000-2001).

Management activities in the past have concentrated largely on areas where tree diameters and volumes could support a timber sale as a means for treating fuels and reducing stocking levels. Most projects also included precommercial thinning (often without complete follow-up fuel treatment) as a means of managing the smaller understory, as well as prescribed burning to further reduce fuel loading and to re-introduce fire as an ecological process. The goal of these management activities is to return to a landscape condition that is sustainable over time and is better able to resist wildfires and insect buildups.

Stices Gulch was included in a list of "at-risk" communities published in the Federal Register 08/17/01, specifically page 43418 ("Urban Wildland Interface Communities Within the Vicinity of Federal Lands That are at High Risk From Wildfire"). This list is a more extensive update of the communities list initially published in the Federal Register 01/04/01. That edition of the Federal Register also includes additional background for these proposals, definitions of affected communities, risk factors, and similar information.

B. ANALYSIS AREA DESCRIPTION

Stices Gulch is a relatively small stream in a narrow drainage surrounded by steeply inclined slopes. The name also applies to the land that makes up the physical features of the drainage, including unnamed tributaries supplying Stices Gulch. The bottom of the Gulch is private land and has a number of home sites, many of which are occupied year-round.

The AA is not adjacent to and does not include an inventoried roadless area. It is not adjacent to and does not include any designated wilderness. There are no other special designations within the AA.

The AA is approximately 5,000 acres, including approximately 700 acres managed by the Bureau of Land Management (BLM), and approximately 870 acres of private land. The balance is National Forest System lands (approximately 3,400 acres).

The AA does not include the entirety of Subwatersheds 25H and I. The analysis area boundary crosses both subwatersheds to include not only the area closest to the inhabited area and private land, but also surrounding warm/dry sites that could logically be included for management.

The Forest Service has right-of-way on Forest Road (FR) 1130, which passes through the private land portion of the AA. It is classified as Maintenance Level 2, with a traffic service level of D, meaning it is maintained for high clearance vehicles.

The maps on pages 46-48 display the vegetation management activities that have occurred in the vicinity in the past 20 years. There have been no recent harvest activities on BLM-managed land.

The map on the following page displays the AA and ownership map. The map following displays the management areas as designated by the Wallowa-Whitman Land and Resource Management Plan (Forest Plan). Management areas do not apply to BLM-managed lands.

Insert aa and ownership map

Insert MA map

Forest Plan Direction

The majority of the portion of the AA within National Forest System (NFS) lands is designated Management Area (MA) 1, with inclusions of MA 15. The 1990 Wallowa-Whitman Land and Resource Management Plan (Forest Plan) indicates that MA 1 is for timber emphasis (*Forest Plan, page 4-56*). MA 15 is allocated to old-growth preservation (*Forest Plan, page 4-89*). Within MA 1 is the sub-designation of 1W, with the intent of managing open road densities at the 1.5-mile/square mile level rather than the 2.5-mile/square mile level during critical periods of big game use. See the previous page for general locations of these management areas within the analysis area.

This project tiers to the Forest Plan (as amended) and its final environmental impact statement (FEIS) for direction. This project also incorporates by reference the "Watershed Management Practices Guide for Achieving Soil and Water Objectives" (Blue Book), which serves as a guide for applying watershed protection practices to various management activities, such as timber sales, road design, and mining.

Forest Plan standards and guidelines and the Blue Book provide many of the mitigations for this project.

Interior Columbia Basin Ecosystem Management Project Environmental Impact Statement (ICBEMP) and its supporting scientific findings also provided selected guidance. This document is not yet final (signed), and therefore does not provide standards for federal agencies, but provides valuable information about many resources.

The Forest Plan visual management objectives (VQOs; see glossary) for the Stices Gulch AA include partial retention foreground (PR/fg) to the area adjacent to Highway 245 (Dooley Mountain Highway) and partial retention background (PR/bg) to the area north of Forest Road 11 (Skyline Road) and the Trail Creek area. The VQO for the remainder of the AA is "modification" (see glossary) middleground (M/mg). Foreground, middleground, and background refer to the portions of the area as seen from a specific point. Foreground is the area close to Highway 245; middleground and background are as seen from Highway 245 and FR 1130.

The Forest Plan classifies Highway 245 as a Sensitivity Level 2 travel route. Sensitivity levels are discussed in the FEIS for the Forest Plan, page III-78. Sensitivity Level 2 is "average" sensitivity as a measure of people's concern for the scenic quality of the National Forest. VQOs are further addressed on page III-79 of the FEIS.

Resource Management Plan Direction (BLM)

The Resource Management Plan Record of Decision (*RMP/ROD, 1989*) provides general direction for soil productivity, riparian area protection, and other resources, and is similar to the Forest Plan in providing guidance to planners. More specific

controls for timber sale activities are contained in the contract documents, which are subject to public comment, and are not necessarily spelled out in the mitigations section of this EA. Several parcels of BLM-managed land are in this analysis area (see map, page 4). Management actions prescribed for BLM-managed lands would be the same as prescribed on NFS lands (commercial thinning, precommercial thinning, prescribed burning, and enhancement projects).

Direction that applies to NFS lands does not necessarily apply to BLM-managed lands. For example, both agencies follow direction established in the National Fire Plan, but the direction to do analysis for road construction or reconstruction is a Forest Service requirement specific to roads on National Forest System lands. In addition, the BLM would apply INFISH standards to implementation of any alternative, although the agency is not required to apply these standards if there are no listed fish species present.

C. EXISTING CONDITION

The background discussion on pages 1-3 explains the current situation for the Stices Gulch Interface area. Additional information about the resources of the area is included below. More in-depth information is available from individual resource reports in the analysis file. A watershed analysis has not been completed for the Powder River – Salisbury Watershed.

Baseline vegetation data for the area was collected using stand exams, walk-throughs, and aerial photo interpretation. Information was collected in the 1980s and 90s for most of the area using Forest Service crews. Information is stored in the District Geographic Information System (GIS) database. Unit-specific data as well as landscape summaries were generated using a PC-based GIS system of Arcview and a Paradox database. Information for BLM-managed lands was blended with Forest Service databases. This information was collected in similar ways.

An understanding of the current resource situation compared to the desired condition of the AA reveals resource areas that could be improved to meet standards and guidelines. The overall goal of providing a sustainable, healthy forest is consistent with meeting the National Fire Plan goals.

Botany

There are no known locations or habitat for any threatened, endangered, and sensitive plant species within or in close proximity to the aa. There are no documented locations for any currently listed Region 6 Sensitive plant species (Forest Service; updated 1999) in this portion of the Baker Ranger District (see complete list of plant species listed by the ESA or carried on the R6 list in the analysis file).

There are no documented locations for any of the special status plants (BLM).

Two previously listed species on the 1991 R6 Sensitive Plant list, (*Allium brandegeii* and *Astgragalus atratus*) are no longer on the Forest Service list (but are on the BLM list) and do not occur within the analysis area.

There does not appear to be a high potential for sensitive plants or large areas of potential habitat.

Fire / Fuels

Historical Condition

Historical fire regimes of the forested land in Wallowa-Whitman National Forest have been the subject of several studies, the most recent by Heyerdahl, Olson, and Agee in 1996 and 2000. These studies have found that fires were larger, more frequent, and lower in intensity historically in the warm/dry biophysical environments than is now common. Fire was a dominant natural process in the Blue Mountains. Studies show that low-intensity fires burned throughout the drier forests and grasslands perpetuating open, park-like stands of fire-tolerant species such as ponderosa pine, Douglas-fir, western larch, and grass. Median fire return intervals in the dry forest types was 5 to 12 years or less. These fires would have resulted in low fuel loadings and greatly reduced dead/down wood compared to the current condition.

Frequent fires would have the effect of pruning lower limbs and consuming other types of ladder fuels, reducing the chances that a fire could climb into the crowns of the trees. Stand density would have been low, consisting of large trees with scattered groups of regeneration. Widely space, large fire-resistant trees would have been common. Non-forested openings would have been larger and more common than present. Species adapted to frequent fires and open, park-like stands would have been favored over fire-intolerant species such as grand fir.

The majority of fires occurred in the late summer or fall when fuel moistures of the large dead wood are typically low, allowing for high consumption, corresponding to the period of the year with peak occurrence of lightning. In the warm/dry and cool/dry biophysical environments, large dead wood was probably rare. Within riparian areas where forest compositions are similar between riparian and upslope forests, they subsequently experienced similar fire return intervals and thus had similar low levels of large dead wood. Coarse woody material likely occurred in a more patchy spatial arrangement (Olson, 2000). Moderate and high-intensity fires occurred, but were typically in small pockets of heavy fuels of a few acres or less in size. Riparian areas that are composed of more mesic forest types typically have heavier fuel loadings than the surrounding upland stands, due to the greater growth of vegetation due to increased available moisture. During dry periods, these riparian areas could burn with higher intensity.

Numerous low-intensity fires during late summer and fall would have resulted in widespread low-level smoke throughout the Blue Mountains. This smoke would appear as a light blue haze that drifted with the general winds, and was probably

the source of the name 'Blue Mountains.' This frequent burning maintained the open park-like stands described by early settlers and seen in early photos (pre-1900). This condition is currently labeled as Condition Class 1, and is the ideal desired condition in terms of fuels management and establishing conditions similar to historical situations. The grass/shrub plant community is generally Condition Class 1 (see map next page).

Fire occurrence declined abruptly beginning in the late 1800s. This corresponded with a dramatic increase in the numbers of cattle, sheep, and horses/mules grazing in the area. Grazing by large numbers of animals would have greatly reduced the fine fuels, the main carrier of fire spread. Overgrazing, along with the high levels of mining activities, would have created numerous trails, also limiting a fire's ability to start and spread. Extensive logging removed many of the large diameter second growth trees within this AA in the past 20 years.

During the past 50 years, effective fire suppression has further reduced the acreage burned. Combined with the current changed grazing practices and forest management activities, this lack of fire has resulted in the current existing condition of fuels buildup and high stand density of small trees well beyond the historic range of variability. This current condition is labeled as Condition Class 2 or 3 (see map, next page and glossary). Within these classes, dead ground fuel loadings range from approximately 10 to 15 tons per acre in the 0-3" diameter size class. Tree densities range from 100 to 300 stems per acre.

The intent of prescribed burning and other fuels treatments is to return fire to its natural role in the ecosystem, and reduce or isolate the areas of heavy fuel loadings and longer fire-return interval stands. The current stand structure/fuel components have shifted the fire regimes from low intensity (Condition Class 1) to high intensity (stand-replacing; condition Classes 2 and 3) over most of the AA.

Reduced late summer and fall burning in the past 100 years resulted in a reduction in particulate matter from wood smoke in the lower levels of the atmosphere, allowing clearer visibility as a general rule. The large wildfires and increased prescribed burning of recent years throughout the Blue Mountains are beginning to change this condition toward the historic condition. The Dark Canyon Fire (1986; 200 acres), Cornet Fire (1986; 2,200 acres), Dooley Mountain Fire (1989; 20,000 acres), and various smaller fires over the past twenty years are contributing to this conversion.

The map on the next page displays the current Condition Class for the AA.
Insert condition class map

Fisheries Resource

Field surveys of Stices Gulch on October 02, 2001 indicated that Stices Gulch is **perennial non-fish-bearing** from the private/public land boundary (T11S R39E S30 NENE). Stices Gulch becomes **intermittent** just above the point where Forest Road 1130 crosses this stream (see map, page 14).

Field surveys of Stices Gulch in 2000 indicated that this stream channel also became intermittent in the same area as noted in 2001. No redband trout were found anywhere on the public lands portion of Stices Gulch. A pond on private property is likely a fish passage barrier, and partially explains why no fish have been observed on public lands upstream. The year 2001 was a drought year with below-average precipitation levels through September 2001. The extremely low flows, steep gradient, and limited pool habitat would also explain why there are no fish in the headwaters of Stices Gulch on public land.

Tributary One to Stices Gulch (T11S R40E S19 SWSE)

Field surveys of Tributary One to Stices Gulch on October 02, 2001 indicated that this stream is **perennial fish-bearing** from the private/public land boundary (T11S R40E S30 SENE) up to the pond. From that point on, Tributary One to Stices Gulch is **perennial non-fish-bearing** up to a point about 300 feet above FR 1130050 (T11S R40E S29 NWSW). The Tributary One headwaters source is **ephemeral**. Riparian vegetation, in the form of deciduous and conifer vegetation, is very abundant along Tributary One to Stices Gulch.

Tributary Two to Stices Gulch (T11S R40E S30 NWNE)

Field surveys of Tributary Two to Stices Gulch on October 02, 2001 indicated that this stream channel is **perennial non-fish-bearing** at the private/public land boundary (T11S R40E S30 NWSW). Tributary Two to Stices Gulch also becomes **intermittent** just above the point where Forest Road 1130 crosses this stream. The culvert below Road 1130092 has been buried by road grading activities. Tributary Two is **perennial non-fish bearing** where this culvert crosses under 1130092.

For the most part, stream shade, in the form of deciduous and conifer vegetation, is very abundant along this tributary. Like all the other streams within the analysis area, the headwaters of Tributary Two are very steep and the stream channel is cascade/plunge-pool habitat.

Tributary One of Tributary Two to Stices Gulch (T11S R40E S30 NWNE)

Field surveys of Tributary One of Tributary Two to Stices Gulch on October 02, 2001 indicated that this stream channel is **perennial non-fish-bearing** at the private/public land boundary (T11S R40E S30 SESW). The two spring sources contributed less than 0.5 cfs (cubic feet per second) of stream flow to this particular channel. The stream channel disappears above the two springs and

becomes ephemeral until just below Road 1130, where it starts to flow once again. The two spring sources have been impacted by livestock grazing activities.

With the exception of the lowermost portion of the stream channel just above the private land boundary, stream shade, in the form of deciduous and conifer vegetation, is very abundant along this tributary. Like all the other streams within the analysis area, the headwaters of Tributary One of Tributary Two are very steep and the stream channel is cascade/plunge-pool habitat.

Tributary Two of Tributary Two to Stices Gulch (T11S R40E S30 NESW)

Field surveys of Tributary Two of Tributary Two to Stices Gulch on October 02, 2001 indicated that this stream channel is **ephemeral** at the private/public land boundary (T11S R40E S31 SWNE). The area immediately to the west of the stream channel had been logged, leaving a sparse cover of trees on the adjacent slope. Stream shade, in the form of deciduous and conifer vegetation, is abundant along Tributary Two of Tributary Two to Stices Gulch.

Tributary Three to Stices Gulch (T11S R39E S30 NWNE)

Field surveys on October 21, 2001 indicated that this stream is **perennial non-fish-bearing** from its confluence with Stices Gulch to Road 1130. Tributary Three becomes **intermittent** just above the point where 1130 intersects the stream. This stream has low flows, a steep gradient, and pools are small.

Trail Creek (T119S R39E S30 NWNE)

Trail Creek was surveyed on October 29, 2001 from the Forest Boundary (T11S R40E S18 NENW) up to its spring source. Trail Creek is a series of wet meadows interspersed with stretches of **ephemeral** stream channel. This is the case all the way up to its headwater source (T11S R40E S17 NESW). Rainfall to date has been insignificant, but the surface flows in Trail Creek are more evident, as evaporation is not exceeding the rate of seepage to the surface of the Trail Creek stream channel. Based on these observations, Trail Creek is determined to be an **interrupted perennial non-fish bearing** stream (IPNF). Road 1120 did not appear to be having any obvious adverse effect upon the Trail Creek stream channel, as there were no signs of sediment entering Trail Creek from the road. There is evidence that woodcutters have been crossing Trail Creek. Damage to Trail Creek was slight.

Rancheria (**T11S R39E S13 SWNE**)

Rancheria Creek was surveyed on October 29, 2001 from the Forest Boundary (T11S R39E S13 SWNE) to a point where Road 1130078 parallels Rancheria Creek (T11S R39E S24 NENE). Rancheria Creek is an ephemeral stream

channel from the Forest boundary to this point. The only water observed was at a point where two ephemeral stream channels intersected Rancheria Creek (T11S R39E S13 NWSW) and just below the private land boundary where the landowner had carved out a stock pond, which is capturing the snowmelt coming from the upper reaches of Rancheria Creek**.**

The surface water on public lands tied two different in-channel seeps together and is about 60 feet long; otherwise, Rancheria Creek was dry. Deer and elk had trampled out the two seeps, as they are the only water sources in upper Rancheria Creek. The west slope above Rancheria Creek had been precommercially thinned sometime in the past.

The map on the next page displays the streams and tributaries within the Stices AA.

Insert stream/tribs map

Heritage Sites

The AA is within the traditional use area of the Umatilla, Walla, Walla, Cayuse, and Northern Paiute tribes, including lands ceded by the Treaty of 1855 with the Confederated Tribes of the Umatilla Indian Reservation. Traditional uses in this area include fishing, hunting, and gathering of plants at usual and accustomed places. According to interviews with tribal elders, Cayuse and Umatilla peoples customarily hunted and gathered roots on tributaries of the upper Powder River. Archaeological evidence indicates that for thousands of years Indian people inhabited the uplands between the Powder and Burnt Rivers, where they hunted, gathered and processed root plants, and obtained locally available obsidian for manufacture of tools.

In the 1860s two principle wagon roads were established over the dividing ridge between the Powder River and Burnt River placer mines. One of these roads, later known as the Dooley Mountain Toll Road, ascended east of Trail Creek along an unnamed tributary. Small scale logging using horses probably occurred during the latter half of the 19th century to feed the sawmills on Beaver Creek and the Burnt River. Mining camps were scattered along gold-bearing tributaries, including Stices Gulch, where numerous placer claims were patented in 1905.

Known sites in the AA include lithic scatters, isolates, and obsidian sources; mining adits, test pits, and tailings; buildings left by the early miners and settlers (e.g., cabins, outhouses); early logging equipment and similar artifacts left by people as they came to live and work in the area, or passed through; and one segment of the Dooley Mountain wagon toll road. Except for homestead fences, no other homestead structures were found on BLM-managed land.

Minerals

There are presently no active mining claims recorded through BLM within the AA. The only recent activity was a Plan of Operations for the “Side Pocket Placer,” located in T11 S, R40 E, Sec 19 W½, and approved in April 1994. This project has not been active since at least 1997, and the mining claim is now listed by BLM as “Closed”, with the last assessment year recorded in 1994.

A large number of mining claims were located in the southeast portion of the AA in the early 1980s (in T11 S, R40E, Sections 29-32). The last years of assessment for these claims were between 1982 and 1991, and all are now listed by BLM as “Closed.” All claims on BLM-managed lands are also listed as “Closed,” with activity dates ranging from 1973 through 1980, with the last year of assessment on all the claims occurring in 1989 or 1999.

The only other mining-related activity within the AA is the use of roads to access projects to the west and southeast of Dooley Summit.

Noxious Weeds

Information on noxious weeds is based on existing Forest Service inventory data as well as recent field surveys conducted on BLM and National NFS land. High probability weed habitat was surveyed. This primarily consisted of windshield surveys of open roads. Noxious weeds on private land within the AA were not inventoried.

The species of noxious weeds known to occur within the AA include: diffuse knapweed, yellow toadflax, St. Johnswort, hounds tongue and Canada and Scotch thistle. All of these weed sites are located on or near existing roads, with the majority of them concentrated along Highway 245. Annual treatment of these weeds has occurred on the Forest in accordance with the *Wallowa Whitman Integrated Noxious Weed Management Plan* since 1991. Net area currently infested by noxious weeds is less than 5 acres. Additional information on noxious weeds is available in the analysis file.
A recent field survey of BLM-managed lands within the AA found several species on the Oregon Department of Agriculture's "B" list of noxious weed species. These were Canada thistle, Scotch thistle, hounds tongue and St. Johnswort. All are relatively small and scattered populations, primarily along roadsides and old landings. These species are not currently as high a priority for treatment as several other weed species, and no treatments have occurred. Although none were found, diffuse, Russian, and spotted knapweed as well as leafy spurge and yellow toadflax, are known to be in the general area. This area will continue to be periodically surveyed. If any of the above five species are found, they will be actively treated in accordance with the Vale District Noxious Weed Management Programmatic Environmental Assessment.

Rangeland Management

Non-forested rangelands within the AA are generally in good range condition. Rangeland vegetation is characterized by relatively small areas of big sagebrush, bitterbrush and mountain mahogany with an understory of bluebunch wheatgrass, Idaho fescue, green needlegrass, Sandberg's bluegrass and prairie junegrass.

The lower elevation timber stands are dominated by ponderosa pine with an understory of pinegrass and elk sedge. In many cases these stands are so dense that very little, if any, ground vegetation exists. These stands are currently unusable for livestock grazing. Many stands are inaccessible to livestock and wildlife due to the volume of downed logs and thick understory of small conifer trees.

Past timber harvest (particularly Rancheria Timber Sale) has created several openings (approximately 40 acres in size) within the AA that are stocked with sapling-sized western larch, lodgepole pine, Douglas-fir and ponderosa pine, with an understory of elk sedge, pinegrass, and western fescue. These areas provide good foraging areas for big game and livestock.

There are three grazing allotments within the Stices AA: Auburn, Lockhart, and Trail Creek Allotments. Livestock grazing is authorized on each of these allotments. The Auburn and Lockhart Allotments are primarily on NFS lands. The Trail Creek Allotment is primarily private land with isolated tracts of BLM-managed land and a small portion of NFS land included.

The Forest Service and BLM allotments are managed in accordance with the standards and guidelines contained in the Forest Plan or Resource Management Plan, as well as, allotment management plans.

A summary of allotment information is included below.

Table 1
Stices Gulch Interface AA Allotments

Allotment	Season of Use	Permitted Numbers	Gross Acres	Net Acres[1]
Auburn	6/1 – 10/9	150	21,630	810
Lockhart	6/15 – 10/15	170	24,800	2,594
Trail Creek	6/1 – 8/30	82	3,498	824

[1]Acres of public land within the AA

Auburn Allotment

The Forest Service initially authorized grazing on the Auburn Allotment in 1947. At that time 220 cattle were permitted to graze from June1 to October 31. Currently 150 cow/calf pairs are authorized to graze on the allotment from June 1st until October 9th.

The *Auburn C-H Allotment Range Allotment Plan* was approved by the Forest Supervisor in 1974.

Data from a range analysis conducted on the Auburn Allotment in 1973 indicated the condition and trend on the allotment as a whole as “fair,” with no apparent trend in vegetative and soil conditions.

Data from a range analysis conducted more recently (1995) indicated a range forage condition of “fair” on about 136 acres and “good” on about 153 acres within the AA. This information would suggest improving range conditions on the allotment.

During the range analysis conducted in 1995, six condition and trend transects documented “good” soil conditions; one transect documented “fair” soil conditions.

Lockhart Allotment

The Forest Service currently authorizes 170 cow/calf pairs to graze on the Lockhart Allotment from June 15th until October 15th each year.

The allotment management plan for the Lockhart Allotment was approved by the Forest Supervisor in 1994. In accordance with this plan the allotment is managed on a three-pasture deferred rotation grazing system.

Based on the range analysis that was conducted in 1991, 79% of the rangeland on the Lockhart Allotment is classified as "good" condition. Most of the remainder of the rangeland is in "fair" condition, with less than 1% in "poor" condition.

Trail Creek Allotment

The Trail Creek Allotment is approximately 3,500 acres in size. It encompasses approximately 700 acres of the BLM-managed land near Trail Creek on the north end of the AA. A small portion of NFS land (124 acres) is included in this allotment, the remainder (2,635 acres) is privately owned.

Range condition in the BLM-managed and National Forest System lands is generally "fair," with the exception of the riparian zone along Trail Creek, which would be classified as "poor." Most the Trail Creek riparian zone is privately owned; only about 5% crosses BLM-managed land.

This coming year (2002) 82 livestock will be authorized to graze on this allotment from June 1st to August 30th. The stocking rate on suitable rangeland is approximately 10 acres per cow/calf pair. The rangeland is managed in a two-pasture deferred rotation grazing system.

The public land on the Trail Creek Allotment is managed in accordance with *Standards for Rangeland Health and Guidelines for Livestock Management* (43 CFR 4180). Maximum allowable use will not exceed 50% of current annual growth on upland grasses; 45% on riparian grasses and forbs; and 30% on riparian shrubs.

The allotment is divided into two pastures by a cross fence. This fence is on private property.

Range Improvements

There are currently six livestock water developments on the Forest Service inventory within the AA. Each of these water developments consists of a stock tank, pipeline, and associated water collection device, located in or near small springs and seeps within the AA. Most of these water developments are more than 20 years old, and are no longer operational. The original intent of these water developments was to improve livestock distribution by providing livestock water in under-utilized areas of the rangeland.

There are approximately 3.5 miles of inventoried barbed-wire fence within the boundaries of the analysis area. Private land boundary fences have not been inventoried.

Most of the water sources for livestock water for the Trail Creek Allotment are located in Trail Creek drainage on private land. The BLM has no developed stock water on this allotment.

The map on the next page displays the allotments in the AA.

Insert allotment map

Soils

The soils in the Stices Gulch Interface AA have been studied, mapped, and described as part of the National Cooperative Soil Survey. The survey describes soil map units, their individual components, and provides interpretive information on soil use and management.

The AA Area contains a variety of soil conditions that are typical of the Blue Mountain physiographic province. Soils form a pattern across the landscape and reflect variations in parent materials, topographic positions, underlying bedrock, vegetation, and climate. They are quite variable and may range from those on thin, rocky, low-productivity ridge top scablands to those in deep ash accumulations on very productive grand fir sites.

Soils within the analysis area have developed primarily from volcanic ash and residual parent material. Soil factors which influence productivity, such as total depth, effective rooting depth, ash thickness, and coarse fragment content vary across the landscape by topographic position. In general, the deeper, more productive soils are found on north and east aspects, toe slopes, and in swales (ephemeral draws). Shallower, less productive soils are found on south and west aspects, steeper slopes, and on the noses of ridges.

The soils within the AA can be placed into four groups, according to the Natural Resource Conservation Service (NRCS) Soil Survey of Baker County Area, Oregon.

Riparian Soils:

(map units 41A and 173C)

Alluvial: this single mapping unit is stringers along streams. The soil depth varies. Depth to water table varies from 1 foot to greater than 5 feet and supports a variety of vegetation.

Riparian: The geology is of the surrounding bedrocks. There are some inclusions of other rock types. Some of the riparian and meadow areas are too small to map out due to the mapping scale.

This group is estimated to be less than 55 acres and is approximately 1 percent of the analysis area.

Schists

(map units 24D, 24E, 24F, 148F, 149D, 149E, 150D)

Schist bedrocks dominate these soils. These parent materials tend to produce soils with low clay content. There may be fewer rock fragments throughout the upper part of the profile.

Cool Soils:

The cool schist soils vary in depth from less than 10 inches to over 60 inches. Volcanic ash in these soils usually occurs on the north or east aspect. Ash thickness varies from 7 inches to over 14 inches (north and east-facing slopes) and less than 14 inches (south and west-facing slopes). The south and west-facing slopes usually lack the dominant ash influence that occurs on the north and east-facing slopes due to geologic erosion and weathering of these exposures. The south and west soils are usually formed in residual or colluvial material. Rock fragments increase with depth and the amount of clay varies in the profile. The vegetation varies from grassland to forest (south or west aspects) and with timber types that include ponderosa pine and Douglas-fir, with grand fir on the north or east aspects. These areas appear to be very stable.

This group is estimated to be about 1,245 acres and is about 25 percent of the analysis area.

Basalt

(map units 1F, 7D, 7E, 39D, 87E, 155D, 155E)

The basalt flows in most cases are thick and behave like the Columbia River Basalts. The margins of these flows are often thin and result in soil properties strongly influenced by buried rocks.

Basalts vary in depth from 10 inches to over 40 inches. Rock fragments increase with depth and the amount of clay varies in the profile. The vegetation is grassland types. These areas appear to be very stable.

This group is estimated to be approximately 425 acres and is approximately 9 percent of the analysis area.

Rhyolite

These areas are dominated by Rhyolite. These parent materials tend to weather to sand size, which may increase erosion ratings.

Cool Soils:

The cool rhyolite soils vary in depth from less than 10 inches to over 60 inches. Volcanic ash in these soils usually occurs on the north or east aspect. Ash thickness varies from 7 inches to over 14 inches (north and east-facing slopes) and less than 14 inches (south and west-facing slopes). The south and west-facing slopes usually lack the dominate ash influence that occurs on the north and east-facing slopes due to geologic erosion and weathering of the these exposures. The south and west soils are usually formed in residual or colluvial material. Rock fragments increase with depth and the amount of clay varies in the profile. Vegetation distribution and types are similar to

those found on schist soils. These areas appear to be very stable.

This group is estimated to be about 3,245 acres and is about 65 percent of the AA.

The major soil complexes represented within the AA exhibit moderately permeability rates and are well drained. Existing established ground cover is good to excellent. No accelerated sheet or rill erosion was noted. The potential for landslides to occur is generally low.

Numerous intermittent tributaries and ephemeral draws (swales) are found within the AA. These channels have been logged, used as skid trails, and grazed. Despite the past logging and skidding operations, the swales have good vegetation establishment and ground cover, and are not showing signs of channel development. Vegetation regrowth and biological activity is breaking up some of the surface compaction (0 to 3 inches) of soil on the historic skid trails and closed roads.

Organic matter (surface litter and duff) depth approximates 0.25 to 1.0 inches. Ground cover, generally consisting of matted pine grasses, heartleaf arnica, woods strawberry, common snowberry (warm/dry habitats), big huckleberry, prince's pine, and twinflower (cool/dry habitats), and shade-tolerant conifer seedlings, is well established in the disturbed areas within the forested portions of the units. On the drought scab soils, lichens, mosses, and to a lesser extent pine grass leaves and crowns account for a high portion of the surface litter.

Previous entries for timber harvest, slash disposal, road building, and grazing have resulted in varying degrees of soil disturbance within the proposed treatment units. The Forest Plan defines detrimental damage as soil compaction, displacement, puddling, severe burning, mass wasting, or erosion. Detrimental soil conditions are to be minimized, with total acreage detrimentally impacted not to exceed 20 percent of the total acreage within the activity area, including landings and system roads. (*Forest Plan*, *page 4-21*).

Existing soil damage in this AA consists primarily of soil compaction and displacement associated with main skid trails, roads, and landings. Compaction and displacement are related to the water-holding capacity of the soil, clay content, slope and surface root mass, soil organic layer, vegetative cover, and down large wood and slash.

A walk-through survey of areas proposed for ground-based treatment resulted in little evidence of detrimental compaction related to past logging. Evidence of old compaction (plated surface soils) is being ameliorated by the established root systems of pine grass, arnica, various clovers, yarrow, woods strawberry, snowberry, and tolerant conifers. Exposed mineral soil does not exceed 10 to 15 percent within revegetated skid roads; that is, skid trails have 85-90 percent ground cover.

Some displacement occurred in most surveyed units. This form of disturbance was

evident where machinery had sharply turned, or where previous harvesting had occurred during periods of wet or moist soil conditions. As was evident in units with compaction, locations of soil displacement were revegetated to 85 percent of ground cover. The eastern portion of the AA had indications of logging on steep slopes.

Puddling was observed in isolated locations in association with roads with unimproved surfaces that had been used by vehicles during wet conditions. Roads in general need drainage work.

There was no visible soil damage from recent prescribed burning.

Special-Use Permits

Pine Telephone System, Inc. has a fiber-optic telephone cable buried in FR 1130 for approximately 3 miles. This line is under a Forest Service special-use permit. Two water transmission lines that deliver water to private land are also under special-use permit. In addition, one road crossing National Forest System land to access private land is also under special-use permit.

Tree Stand Information

Past Stand Treatments

Partial removal harvests of overstory pine, larch and Douglas-fir occurred over much of this analysis area during the 1950s and 1960s. There is evidence of old stumps on BLM-managed lands, but no record for either BLM or NFS lands for the early harvests. From 1980-2001, approximately 1,140 acres within the AA were harvested from NFS lands. Of the total, 240 acres were regeneration harvested (seed tree, shelterwood) and 900 acres were treated with a partial removal harvest such as a commercial thin. There were 560 acres harvested from 1980-90 and 580 acres harvested from 1990-2001. Precommercial thinning was accomplished on 580 acres within the AA since 1990. During the early 1970s, some pine-dominated stands in the Trail Creek drainage were precommercially thinned when they were 40-60 years old.

Vegetation Condition

Stocking levels in many of the stands that were partially harvested in the past now exceed 120 square feet of basal area at 12-14 inches dbh (diameter at breast height). The canopies of these stands have closed in and growth has slowed to the point that the trees are once again susceptible to mountain pine beetle infestation. Most of these stands now have stocking levels that exceed levels recommended by Cochran et al., 1994. The recommended stocking levels are designed to keep stands out of the "zone of mortality" and maintain stocking levels that would allow

endemic levels of bark beetle activity while avoiding epidemic levels of insect activity that would lead to a build up of fuels, increasing risk of fire across the landscape, and departure from moving these stands towards a future large tree character (old growth). Most of these warm/dry stands fall into the low-moderate productivity grouping and are generally incapable of growing stands that would sustain canopy closures in excess of 70 percent for any length of time.

There is a low to moderate amount of mistletoe infection in the pine, Douglas-fir, and western larch.

Many of the north-facing stands in this area fall into the grand fir plant association and are dominated by grand fir, Douglas-fir, larch, or ponderosa pine. Most of these sites are classified as warm/dry biophysical environments. Many of these north-slope stands are now multi-layered and fir-dominated, as opposed to historic conditions that had a greater dominance by pine and larch, along with a more open but clumpy structure. These warm/dry grand fir sites are prevalent in the southern end of the analysis area and total 1,598 acres (see maps, pages 27-28).

The northern end of the analysis area is dominated by warm/dry pine and Douglas-fir (pine/Douglas-fir/pinegrass) sites on primarily the flat or north-facing slopes, and hot/dry pine (pine/fescue) biophysical environments on the south-facing slopes in this area. Warm/dry pine/fir sites are generally multi-layer with pine and fir in the overstory and understory. Hot/dry-pine sites are multi-layer with pine in the overstory and understory. The warm/dry pine Douglas-fir biophysical environment is the most prevalent of the groups (approximately 2,122 acres). The hot/dry pine sites occupy approximately 633 acres.

The northern sites contain the majority of the juniper, sagebrush, and grasslands. Riparian habitat associated with Trail Creek contains some aspen stands. The northern stands range in elevation from approximately 4000 feet (bottom of Trail Creek) to approximately 5200 feet on the ridges, and tend to be drier. The southern stands range from approximately 4200 feet (slopes of Stices Gulch) to approximately 6200 feet (ridge tops), and tend to be moister.

Conifers have begun to overtop and out-compete the few remaining aspen trees along Trail Creek. In addition, ungulate grazing of young aspen is preventing them from growing into larger diameter trees.

Please see the map on page 27 for the biophysical distributions.

Most of the areas that have been precommercially thinned since 1990, as well as the areas that have been recently commercially thinned, are classified as stem exclusion, either open or closed canopy. Approximately 400-600 acres are classified as stem exclusion. The majority of the acres in this analysis area fall into the understory re-initiation structural stage (2,750 acres).

Approximately 400 acres are classified as stand initiation as a result of the regeneration harvests in the 1980s or the 20,000-acre 1989 Dooley Mountain Fire, which burned along the eastern edge of the analysis area.

Between 700-1,000 acres fall into the “multi-story large tree uncommon” structural classification. Most of these stands are located within the two designated old growth areas. These are multi-layer stands with some 21”+ dbh trees in the overstory, but not enough to meet the Forest Service definition of old growth.

Please see the map on page 28 for the structural stages distributions.

Insert biophysical map

Insert stand structures map

Comparison of the Historic Condition to the Current Condition

A detailed analysis of the historic range of variability (HRV) for structural stages was not completed for this area because all proposed harvest treatments are outside of late or old stands. Even without the detailed HRV analysis, the GIS data for this AA shows that when compared to HRV ranges developed for the Wallowa-Whitman Forest, this area is clearly deficit of both multi-layer and open park-like old-growth stands, as well as having multi-layer young stand distributions that exceed historical estimates. Most of the stands in the Stices Gulch Interface AA classify as mid-age class and multi-layer (UR code).

Due to past harvesting on public and private lands and the lack of frequent low-intensity ground fire in this analysis area, there have been significant changes to stand structure, vegetation species composition, and stand stocking levels for current stands when compared to those that had developed prior to pre-European contact. There have been major shifts in this area towards a landscape dominated by small diameter, densely stocked, multi-layered, and in some cases, increasingly dominated by fir stands. These changes have occurred in the pine, mixed conifer, and fir-dominated types, but are most evident in terms of species composition shift in the grand fir warm/dry biophysical environments.

These changes in vegetation have created conditions that threaten the sustainability of the resource and the ability to achieve Forest Plan and RMP standards and guidelines for resources such as those that depend on old-growth stands. Due to current conditions, these stands are becoming increasingly susceptible to epidemic insect outbreaks that would be more intense and last longer than those that occurred historically.

A variety of insects and diseases are becoming increasingly aggressive in these stands because of changes in stand composition and structure this last century. The natural occurrence of fire played the dominant role in keeping stands vigorous and healthy.

Recent (within the last 10-15 years) high-intensity fires (such as the nearby Dooley Mountain fire in 1989) not only kill the trees and some understory species, but also damage the site, either through direct effects of heat and combustion on soil organisms and organic/nutrient capital, or through erosion resulting from fall rains.

Historically the low intensity and frequent interval ground fires maintained space between trees, reduced the amount of ladder fuels, which deterred crown fires, and allowed heat to dissipate without severe damage to the trees. Ground fires also contributed to a lower level of dwarf mistletoe by increasing the spacing between trees and killing those trees with low-hanging mistletoe brooms. Without recurrent low-intensity burning, the fire intensity potential has shifted to a stand-replacement mode.

Because of fire suppression, conifer encroachment, and heavy browsing, there has been a decline in vigor and distribution of aspen, mountain mahogany, bitterbrush,

and willow as compared to historic levels. Increased conifer establishment has probably decreased the amount of open grasslands in the lower and upper elevations.

Watershed

The AA includes Trail Creek, Stices Gulch, and a small portion of Rancheria Creek. Trail Creek is a tributary to Stices Gulch. Stices Gulch and Rancheria Creek are both tributaries to the Powder River. In addition to these major streams, there are also other unnamed perennial, intermittent, and ephemeral streams within the AA, as well as numerous springs. None of the streams within the AA are currently on the Oregon Water Quality Limited Streams – 303(d) List (DEQ, 1998). Near the AA, the Powder River is on the 303(d) list based on the bacteria parameter in which the fecal coliform standard was exceeded. This listed segment of the Powder River is between Sutton Creek and the National Forest boundary. This is also the area in which Stices Gulch and Rancheria Creek meet the Powder River.

The BLM-managed land within the AA is within the Baker County Miscellaneous Geographic Unit, as designated in the Baker Resource Management Plan Record of Decision (*RMP/ROD, 1989*). The riparian objectives, allocations, and management action for this area are included on pages 110 and 115 of the RMP/ROD.

Forest Road 1130 and a portion of Highway 245 are within the Riparian Habitat Conservation Area (RHCA) of Stices Gulch for several miles. Traveling upstream, Stices Gulch splits into multiple tributaries, with roads located in the bottoms of these draws. The majority of the privately owned land is along the lower portion of Stices Gulch adjacent to the main stream and some of the tributaries. The side hills and upper portion of the watershed are mainly NFS lands. The majority of BLM-managed land in the AA is in the Trail Creek drainage. The land adjacent to the BLM-managed land is mostly privately owned (see the map on page 4).

The AA crosses subwatershed and drainage boundaries, so some parameters used to interpret effects (such as road density and/or percent of hydrologically recovered area) may be somewhat misleading, as they were calculated on the analysis area and not a defined watershed or subwatershed.

The total road density for the AA is 5.4 miles/square mile (m/m^2). The open road density is 2.8 m/m^2 and the closed road density is 2.6 m/m^2. There are roads that are currently contributing sediment to the streams in the AA either directly or indirectly. Some culverts at stream crossings are undersized, which could increase chances of a culvert failing during storm events and causing stream flow to be diverted down a road into another drainage or causing the road to fail and creating a debris torrent within the stream channel. Within the portion of FR 1130 on private land, several culverts were replaced recently in response to such an event a few years ago. Roads closed to full-size vehicles on NFS land are used by motorcycles and ATVs. Currently, there are no roads identified as closed on BLM-managed land within the AA.

Riparian areas on both BLM-managed and NFS land are being adversely impacted by livestock grazing. Bank trampling, which leads to increased sedimentation and bank instability, lack of riparian vegetation establishment, and impacts to springs have been noted during field review of the AA.

A wildland fire in the Dooley Mountain area in 1989 impacted the area immediately southeast of the AA. Impacts from this fire, such as increased sediment and stream down cutting, are evident on the eastern edge of the analysis area.

As noted on page 24, the NFS portion of the AA has also been managed previously through timber harvest, precommercial thinning, and prescribed burning. None of the BLM-managed land in the AA has been commercially harvested recently.

There are no recorded water rights within one mile downstream of the AA in the Trail Creek or Rancheria Creek drainage. In the Stices Gulch drainage, there are several registered water rights users within the AA. These water rights are for various uses, including domestic, livestock, mining, and irrigation. Two of the points of diversion are on NFS land; both are domestic water sources for residences supplied from springs. There is no BLM-managed land near any recorded water rights within the AA.

Wildlife Habitat

No wildlife species listed under the Endangered Species Act (ESA) as threatened or endangered are known to currently inhabit the AA. The Canada lynx was listed as threatened in April 2000. Due to the warm/dry biophysical environment there is no lynx habitat within the AA. The AA is not within a Baker District Lynx Analysis Unit (LAU). At this time there are no known lynx inhabiting the National Forests within the State of Oregon.

The gray wolf is listed as endangered in Oregon. As a result of the re-introduction program in Idaho, a few wolves are now dispersing into Oregon. One radio-collared wolf was captured and returned; two others (one collared, one not) were killed, all in or near Baker County. During 1999 and 2000, about 20 different wolf sightings were reported to either the Forest Service or the Oregon Department of Fish and Wildlife. None of these sightings have been verified; all sightings were within Baker and Union Counties. Wolves would likely not establish in this AA, due to the concentrations of human population and number of roads, however, they could travel through the area.

Bald eagles inhabit the environs of nearby Phillips Lake (approximately 6 air miles to the northwest) and could venture into the AA, especially during fawning and calving season. However, the AA is not considered primary bald eagle habitat. The bald eagle is listed as threatened, but is being considered for de-listing due to its population recovery.

The northern goshawk is considered a Sensitive species on BLM lists, and habitat is managed in a manner that does not contribute to the need to list the species under the ESA (BLM Manual 6840). Habitat for goshawks exists on BLM-managed land in the AA. Although the northern goshawk is not on the Regional Forester's sensitive species list, it is a management indicator species (MIS) in the Forest Plan and is recognized as decreasing in numbers. The Forest Service also manages habitat in a manner that does not contribute to the need to list the species under the ESA.

A database query for northern goshawk habitat within the National Forest portion of the AA revealed a small parcel of habitat in the southwest portion of the AA in the designated old growth off the Skyline Road (FR 11), with the balance on private land. There is also a small area of goshawk habitat east of Bald Mountain spring. A northern goshawk was observed within the AA and also past records show sightings adjacent to the AA; however, no nests have been found during field visits in the area.

The BLM and the Forest Service both recognize the California wolverine and the spotted frog as sensitive wildlife species with potential habitat in the AA. Both species are currently on the Regional Forester's Sensitive Species list and are also listed as candidate species by the US Fish and Wildlife Service (FWS). The wolverine has very limited potential travel habitat in the AA. Ponds that contain spotted frog habitat are located on NFS land as well as on private land within the AA.

The table on the next page lists species that may have habitat or is present in the AA and is classified by the BLM as either "sensitive," or is a species the Bureau is tracking, in which case it is managed as "sensitive." In some cases, the BLM species has a different status than the Forest Service status, or is listed by the State as sensitive, and is so noted in the table. An asterisk in the USFS column indicates that the species is also listed as "sensitive" for this agency. MIS refers to a species that is a management indicator for the Forest Service.

Table 2
Sensitive Species Comparison

BLM Species	USFS	OTHER STATUS
Columbia spotted frog	*	
Western toad		
California wolverine	*	
Northern goshawk		MIS
Northern pygmy owl		State-listed
Olive-sided flycatcher		
Flammulated owl		State-listed
Pileated woodpecker		MIS
Pygmy nuthatch		
White-headed woodpecker		
Fringed myotis		State-listed
Pallid bat		State-listed

In 1991, the Oregon Department of Fish and Wildlife (ODFW) initiated a list of sensitive species for the State of Oregon. Habitat is limited for State-listed species that may occur in this AA. These species include the fringed myotis (bat), pallid bat, great gray owl, flammulated owl, and the northern pygmy owl. None of these species were observed during field visits.

For the most part, all of the 3,400 acres of National Forest System land within the AA is forested. Of the approximately 700 acres of BLM-managed land, there are approximately 300 acres of forested habitat, 320 acres of shrub habitat, and 60 acres of grass/forb habitat. In addition to the plant communities as described on page 25, there are several acres of western juniper woodland community type in the area as well.

Over 100 species use the varieties of habitat within the AA, including species such as mule deer, elk, migratory birds (e.g., bluebirds, hawks, flycatchers), bats, insects, and woodpeckers (see the analysis file for additional information).

Surveys to determine the presence/absence or numbers of MIS were not undertaken as part of this analysis. While collecting habitat information for this analysis, the following MIS were encountered or sign of their presence was observed: Rocky Mountain elk, pine marten, pileated woodpecker, northern flicker, hairy woodpecker, downy woodpecker, black-backed and three-toed woodpecker, mountain chickadee, white-breasted nuthatch, red-breasted nuthatch, and pygmy nuthatch.

Blue grouse are fairly numerous within the AA, and Merriam turkeys have also been noted in the vicinity. With the number of deer and elk in the area, cougar are probably also found in the AA. With the number and variety of small mammals and grouse in the area, bobcats would also be expected to occupy the AA.

The AA is located entirely within the ODFW Sumpter Big Game Management Unit (SBGMU). The ratio of bulls to cows is decreasing. Buck/doe ratios are also low for the Dooley portion of the SBGMU. This particular area has some of the lowest numbers of the management unit (personal conversation, George Keister, ODFW). Additional information about big game management and management objectives is available in the analysis file.

The Stices Interface AA is north of the summit of Dooley Mountain. Large areas of Dooley Mountain burned in the Dark Canyon and Cornet Fires in 1986 and the Dooley Mountain Fire in 1989. Soon after the Dark Canyon Fire, the Dark Canyon Cooperative Travel Management Area (Green Dot) was established to help provide more security to big game in the burn area during hunting season. In 2001 the Dark Canyon Green Dot closure area was expanded from 5,200 acres to 14,300 acres to provide better big game security.

Big game use in the AA has been directly affected by the large wildfires on Dooley Mountain as well as the past and present management activities, such as roading, vegetation management, grazing, mining and the increase in homes and yearlong residences in Stices Gulch. Big game cover is variable throughout the Stices Interface AA. Satisfactory thermal cover (70% canopy closure) is limited over the entire AA and in adjacent areas. Most of the AA currently provides marginal thermal cover based on canopy closure, but the understory generally does not provide adequate hiding cover, except where topographic features or distance from roads contribute cover.

Summer forage appears to be plentiful, although spring and fall browse tends to be lacking. The AA supports limited quantities of a variety of browse species. Important browse plants for big game in this area include mountain mahogany, Scouler's willow, and antelope bitterbrush, which are limited in distribution, quantity, and quality. ODFW considers the Stices Gulch area winter range for deer. The east side of the AA contains some of the best and largest number of mountain mahogany plants on the Baker Ranger District. However, most of this mountain mahogany is in decadent condition and is not regenerating.

There are also other, smaller, mountain mahogany plant concentrations scattered over the warm/dry/rocky sites. Wintering big game animals heavily use this vegetation community. The mountain mahogany on BLM-managed lands is also beginning to become decadent. Heavy browsing by deer and elk as well as some livestock grazing have precluded rejuvenating growth of mountain mahogany in these areas.

Additional information about forage condition and species is available in the analysis file. Browsing, grazing, lack of fire, and competition from conifers have all heavily impacted species such as mountain mahogany, aspen, willow, and cottonwood.

The analyses documented in the Lower Montane and Rancheria environmental assessments determined the need to create additional snags in the mid to large

diameter size classes within portions of those project areas. Snag creation by inoculation and tree-topping was completed in 2001.

Snags provide habitat for several wildlife species, especially woodpeckers, bats, nuthatches, and several species of mammals. Current BLM RMP/ROD guidelines call for the maintenance of snags sufficient to support 60 to 70 percent of the viable population of cavity-dependent wildlife. Current information suggests that there are sufficient snags per acre existing on the area to meet guidelines for a variety of sizes and diameters, as specified in the RMP/ROD.

Overall, snags and down logs tend to be most plentiful in draws, riparian areas, and fir biophysical groups that do not have open road access. There are areas within the AA that do not meet Forest Plan guidelines, primarily due to past harvest. In much of the AA, large diameter old-growth snags and large diameter (over 21 inches) green trees are lacking. Recent underburning within the AA has added snags, but they tend to be less than 12" dbh in size. Primary and secondary cavity nesters do not as readily use the smaller diameter trees.

There are two designated old growths (DOG) areas within the AA. The Road 11 pileated woodpecker DOG is 356 acres. A feeding area has not been designated for it. The second DOG area was revised and expanded during the Lower Montane Timber Sale analysis in 1993 and now is 547 acres. The 547 acres includes two pine marten DOGs and one pileated DOG. Although some late and old growth trees exist within these DOGs, they do not meet the full definition for old growth. However, these DOGs are the best old-growth habitat within this AA. There are currently no travel corridors established for the AA DOGs. Due to past and present management activities in the vicinity of these DOGs, opportunities for establishment of fully functional travel corridors and pileated woodpecker feeding areas are severely limited. Corridors and feeding areas could be established and in time could serve a limited function, but due to dissecting roads (including the Dooley Mountain Highway 245), they would have limited utility or value. More detailed information on the DOGs is available in the analysis file.

As noted in the existing condition discussion for watershed (page 30), the open road density of 2.8 m/m^2 is slightly higher than the Forest Plan recommendation for MA 1 (2.5 m/m^2). Wildlife habitat is affected by the presence of roads, whether closed or open. The presence of an opening (including a roadbed) is a deterrent to some species. Road densities affect habitat use patterns of big game and other wildlife species that utilize the AA.

Road densities within the AA affect habitat use patterns of resident and migrant big game. When the AA road density (both open and closed on NFS and BLM lands) is calculated, the total (open and closed) road density is about 5.4 miles of road per square mile. The total open road density in the AA is 2.8 mi/mi^2. The MA-1 portion of the AA has a total (open and closed) road density of 7.9 mi/mi^2 of which 3.1 mi/mi^2 is open. The MA-1W portion of the AA has a total (open and closed) road density of 3 mi/mi^2 of which .7 mi/mi^2 is open. The MA-15 portion of the AA has a total (open and closed) road density of 4.3 mi/mi^2 of which 1.7 mi/mi^2 is open. The

AA receives a considerable amount of motorized vehicle use, which also includes ATVs, motorcycles and snowmobiles. ATVs and/or motorcycles use most of the closed roads that aren't overgrown. The Forest Plan does not prohibit this type of use by off-road vehicles. Certain areas that have gentle slopes with widely spaced vegetation also receive off-road use.

The AA also receives considerable use in the winter. Most snowmobiles access the AA directly from Stices Gulch or the Skyline Road. Cross-country skiing is limited within the AA and generally restricted to the lower roads near Stices Gulch or up on the Skyline Road. Sledding is popular near the south end of Stices Gulch.

D. DESIRED CONDITION (DC)

Not only is it desired that fuel loads be reduced, stocking levels and species composition changed to more closely match historic levels, ecosystems become more balanced in order to be more sustainable and healthy, but it is desired that fires that initiate on private and public lands be more easily contained and result in less damage to resources. It is also desired that a more open, park-like setting be maintained over time to emulate the historic condition, using periodic prescribed fire as a natural component of the ecosystem. A fuels goal is to achieve a Condition Class 1 over time on the majority of the landscape.

The overall DC for this AA is to have a balanced ecosystem that is self-sustaining and healthy, while maintaining and improving water quality, with management of each resource contributing to this balance. DCs by resource area are described in the Forest Plan for most resources (descriptions of management areas serve as a DC for each management area) or are described in existing condition reports in the analysis file. The Geographic Unit description in the BLM Resource Management Plan for Baker County Miscellaneous includes similar direction, including resource condition objectives for the uplands, forestlands, and riparian areas (*RMP/ROD, pages 110-120*). Improvement of the health of the stands, reduction of fuel loading to historic levels, and maintenance of stocking levels that are appropriate for the biophysical environment contribute to the health of all other resources dependent on vegetation, such as wildlife habitat and water quality.

The map on the next page displays the desired Condition Class for the AA.

Insert desired CC map

Activities proposed for vegetation management would contribute to the generation or sustainability of old-growth habitat, and a variety of wildlife habitats, including snags and down logs over time.

A comparison of the existing condition to the desired condition would generate a list of projects that could be implemented to improve the existing situation for many resources. However, guided by the purpose and need for this analysis area, actions are proposed that are consistent with that focus; that is, fuels reduction and associated vegetation management necessary to achieve stocking levels appropriate for the sites and as preparation for fuels reduction.

E. PURPOSE of and NEED for the ACTION

In the past 100 years, logging, grazing, human settlement patterns, and suppression of wildfires have changed the composition of stands in this biophysical environment. As more and more people began to establish homesteads in the Stices Gulch area, improvements such as homes and barns became more at risk to loss from wildfires. People living in a forest setting enjoy the qualities that it brings. However, there is also a risk in living in this environment. Lack of fire has resulted in an increase in densely stocked multi-storied stands with an accumulation of down woody material, which has become fuel for future wildfires. Fires may burn more intensely and are more difficult to control, resulting in greater damage.

As noted in the background section, recent wildfires across the West have increased awareness of the risks associated with living in and adjacent to forest environments. Loss of property, possessions, and the home's forest or forested setting resulted in losses in the billions. Costs to fight these fires were in the billions. Congress and the President have directed the Forest Service and BLM (and other agencies) to expedite and increase the work already underway, and to make new starts to reduce wildfire hazard to homes and watersheds in the wildland/urban interface.

Achieving this primary purpose would begin accomplishing other objectives, including forest and watershed health restoration, sustaining a more healthy and resilient ecosystem better able to recover from future wildfires and insect infestations.

There is a need to reduce the risk of a wildland fire moving from NFS and BLM-managed land into Stices Gulch and private land adjacent to the AA, and also to reduce the risk of a fire originating on private land from moving onto the National Forest and BLM-managed lands. Government funding through the State of Oregon is also available to private landowners to accomplish these same kinds of goals.

Management toward meeting the "Cohesive Strategy" outlined on page 1 of this document provides for prescriptions and actions designed to address this situation, including:

- Increase stand vigor by reducing stocking levels and favoring ponderosa pine and western larch species as leave trees.

- Reduce the susceptibility of conifer species to insect-caused tree mortality and crown fires by managing stocking levels and favoring ponderosa pine and western larch species as leave trees.

- Reduce existing fuel loadings through thinning, hand-piling, and burning fuels adjacent to the interface boundaries; utilize mechanical methods to reduce fuels on forested areas where feasible (e.g., Slashbuster, see page 111), grapple piling; see page 110-111) with burning); thinning followed by piling and burning; utilize forest materials where possible.

- Increase the spacing/distance between tree crowns to reduce the risk of crown fire (fire spreading from tree crown to tree crown).

- Reduce the amount of ladder fuel (small understory trees, brush, and low growing limbs that help carry the fire from the ground up into the crowns of the trees).

- Encourage further resistance to wildfires and insect infestations by favoring large trees as leave trees.

- Treat fuels within stands adjacent to private property to increase defensible space and reduce wildfire intensity; increase public and firefighter safety.

- Link with previously treated stands that have low existing fuels in order to extend the defensible space and maximize the effects of the proposed treatments.

- Encourage cooperation with all landowners with all actions.

The State of Oregon, through the Department of Forestry, is providing opportunities for fuels reduction activities on private land. The Department of Forestry is currently coordinating activities with private landowners to use grant money to assist communities in managing vegetation on private land to reduce fuel hazards and to protect private land and improvements on the land. The Forest Service and BLM are cooperating with these activities to achieve maximum effectiveness. These projects would be proposed by private landowners to the Department of Forestry and managed through the State. There is a potential to coordinate these activities with projects proposed on NFS and BLM-managed lands.

The objectives of all projects on private and public lands are to:

Reverse adverse trends of increasing numbers of large wildfires by restoring fire to its natural ecological role in fire-adapted ecosystems;

Reduce the risk of a high-intensity, high-severity fire in and around Stices Gulch;

Protect life and property;

Maintain these conditions over time for maximum benefit;

Reduce risk to firefighters (local landowners, rural firefighters, and Forest Service, BLM, and State employees).

F. PROPOSED ACTIONS

The Forest Service and BLM propose to achieve maximum resource protection through landscape fuels reduction treatments. Management actions proposed would be the same for BLM-managed lands. A variety of treatment methods would be used in conjunction with prescribed fire. Actions would include thinning, hand and mechanical piling, mechanical treatment, pile burning, and underburning. Overstory tree thinning is proposed to reduce the possibility of crown fires and reduce fire intensity. These actions are a first step at managing the fuel loading in this area. The actions would need to be revisited and some steps repeated in years to come, particularly prescribed burning, in order to sustain the desired condition.

In addition, mountain mahogany, aspen, and bitterbrush pockets, clumps, and stands would be managed to encourage new growth and expansion on the site (enhance). Pileated woodpecker feeding areas would be designated in relation to an existing DOG for pileated woodpeckers. Travel corridors would be established between the old growth blocks.

Specific actions include:

Underburning approximately	2,500 acres
Machine piling approximately	435 acres
Whip felling/thinning, piling, burning approximately	1,400 acres
Commercial thinning approximately	600 acres/1-1.5 MMbf
Temporary road construction, BLM (part on private land)	2,330 feet
Road maintenance	estimated 7 miles (approximately $3,640)
Closed roads temporarily opened for activities	1½ miles

(MMbf = million board feet)

Harvest/biomass removal would utilize ground-based systems (tractor) and skyline (cable suspension) systems from existing roads, except on BLM-managed land, where a temporary road would be constructed. Activities on these acres overlap.

Approximately 3,000 acres of the 5,000-acre analysis area are planned for treatment.

Hand and machine-treated units would be prescribed burned, except where designated to be left for resource reasons (e.g., wildlife habitat). In some units the material would be available for utilization prior to piling or burning.

Whip felling or thinning would remove ladder fuels from leave trees or fuels from around leave trees. Ladder fuels are either limbs that give fire access to the crown, or closely grown small trees under larger trees that encourage fire to spread from them to crowns of taller trees. All acres planned for burning would include this step. Commercial thinning is planned in areas generally accessible by existing roads where stocking density could be managed to reduce fuel loadings and achieve warm/dry biophysical stocking levels. "Commercial" is defined by tree diameter size and is generally trees with diameters at 7 inches or greater at breast height. Whether material is sold or not, there are opportunities to "utilize" the cut material rather than burning it. Utilization may require the government to pay a contractor to remove the material.

In addition to fuels reduction and forest health activities through vegetation manipulation, there are opportunities to manage the browse and hardwood species. These activities are further described under Alternative 2.

An access and travel management plan is not part of this analysis. No roads on NFS lands are planned for construction, reconstruction, closure, or decommissioning. Approximately one-half mile of temporary road is planned for construction on BLM-managed land.

G. DECISIONS NEEDED

The responsible officials or deciding officers (Forest Service District Ranger and Bureau of Land Management Field Manager) must determine how the available resources are to be managed to best meet the intent of the Forest Plan, RMP/ROD, and the National Fire Plan, while considering the needs of all resources in the analysis area. The responsible officials must determine what the appropriate management treatments should be, if any, and how they should be combined to best meet the purpose and need of the project. Use of fire would be carefully weighed as a management tool. Timing is an important decision factor, particularly with prescribed burning.

There may be some decision/timing options in relation to implementing projects on private land in coordination with the Department of Forestry.

The deciding officers will also determine if these are major federal actions requiring the development of an environmental impact statement. That determination is made by weighing the significance of the actions, based on context and intensity (40 CFR 1508.27).

H. SCOPING

Letters describing the project were sent to people on the District mailing list; this list included parties interested in BLM planning projects. The project was also included in several quarterly Schedule of Proposed Activities (SOPA) announcements. Three letters were received during the scoping period. A public meeting was held October 24, 2001 as a means of direct contact with residents and other interested parties. As a result of the meeting, emphasis has been placed on piling and burning the slash immediately adjacent to the Rancheria area along the private property/NFS boundary (Section 13). Rather than change the boundary to include this area, which has been precommercially thinned and has a high fuel load, the previous project analysis will enable the slash to be treated with funds from the National Fire Plan.

Letters received during the scoping period advised the planners to carefully consider effects of introduced fire, introduced a study from Western Montana on impacts of proposals such as these on fish, included a master list of scoping considerations, and introduced a study about wildland fire threat to homes.

I. KEY ISSUES

Issue 1: Large-scale burning, which would produce large quantities of smoke, could impact people who live in Stices Gulch. Alternatives need to be responsive to air quality as it affects those living and working in the area.

Key indicators

- Tons/acres of material burned
- Tons of particulate matter released in the air
- Acres of underburning vs. pile burning
- Smoke production of pile burning vs. landscape burning

Issue 2: Another key issue is management of the vegetation to produce healthy and resilient ecosystems. This issue may be defined by two sub-points: actions that modify fuel profiles (reducing fuel loading) and those that change species composition to those species more resilient to fire, insects, and disease, thereby contributing to resilient and healthy ecosystems. Both actions contribute to reducing the incidence of high-intensity/high-severity fires around Stices Gulch area. Different alternatives could produce different levels of change to the vegetation.

Key indicators

- Fuel Loading
- Tons of existing fuels reduced
- Ecosystem Health
- Acres of thinning
- Degree of stocking level reduction
- Acres of stocking composition changed

Acres of stand structure changed

Issue 3: Associated with vegetation management is a key goal of protecting life and property, both for people who live and work in the area, and for wildland firefighters who respond to incidents. Fuel treatments provide better defensible spaces when maintained than, for example, areas that have received general harvest or precommercial thinning without fuels treatment follow up.

Key indicators

Change or movement toward Condition Class 1 or 2 from 3
Increase in defensible space locations

J. ADDITIONAL RESOURCE ISSUES AND CONCERNS

Management concerns that were not identified as issues are addressed, even though there is minimal or no impact expected to the majority of these concerns. These factors/concerns have not been raised by the public, but effects will by analyzed by the interdisciplinary team as part of these project proposals, because they are resources within the planning area that could be impacted. These include such resources as cultural heritage, soils, wildlife habitat, fisheries, watershed values, and concerns for noxious weeds.

II. ALTERNATIVES, including the Proposed Action

This section describes the process used to design alternatives, identifies any alternatives eliminated without detailed study, and then lists alternatives developed. A list of constraints (mitigations measures) and monitoring needed for all action alternatives follows the comparison of alternatives chart (page 68). A "no-action" alternative is included as part of a reasonable range of alternatives as required by the National Environmental Policy Act (NEPA), and to act as a baseline of comparison of the action alternatives.

The alternative section is a brief summary of how each alternative would impact or affect some of the resources, particularly those identified as issues. A full discussion of impacts is addressed in the next chapter (III).

A. PROCESS USED TO DESIGN ALTERNATIVES (planning assumptions)

Chapter I documents the situation and background for development of the actions described under each of the alternatives. All activities are planned to be maintained over time. Fire used as a tool must be repeated at regular intervals in order to be effective. Planners intend to maximize effectiveness from a fuels standpoint, while considering potential impacts to other resources.

Additionally, it is important to reduce the risk around homes and structures because current restoration projects located around Stices Gulch will use prescribed fire as a restoration tool. Reducing the risk helps to lower the threat if a prescribed burn were to escape. While the likelihood of this occurring is quite low, the consequences if it were to occur indicate a prudent course of action would be to do that which is needed to lower the existing risk profile. Coordinating activities with the State (fuels reduction opportunities on private land) would extend the ability of both federal and state agencies to manage the risk related to fuel loading.

Initial attack response to new fire starts would be aggressive under all alternatives. All wildland fires on NFS lands within the AA will be suppressed as outlined in the Forest Plan, and on BLM-managed lands in accordance with Bureau policy. If requested, fire suppression personnel and resources from both agencies would assist the State of Oregon with the suppression of fires on private property, except for direct actions on structures.

Opportunities would be examined to provide firewood to the public. One method of making firewood available is to direct the public to sites that have been recently thinned and allow time for the public to pick through and select whatever down material people wished to salvage for firewood. This may cause a delay in treating the fuels generated from implementation of the project. The trade-off to consider is the increased risk of the presence of these fuels versus the public's desire to utilize readily available firewood. Firewood salvaged would be largely green, and would have to cure for a year prior to effective use.

Each acre within the analysis area was examined for fuels reduction opportunities. However, some areas within the AA are not included for management under this analysis because:

they are already under management and have been precommercially thinned in the past, or are proposed for precommercial thinning and slash treatment under a separate analysis;
areas previously treated do not need a follow-up management activity;
portions would remain as hiding cover, travelways, or serve other wildlife habitat needs;
they have already been recently prescribed burned and are planned for future burn treatments.

The map on the next page displays precommercial thinning that has been completed within the analysis area. The map on the following page displays recent timber sales, and the map following displays the type of harvest for those sales.

Insert TSI map

Insert recent activities map

Insert harvest types map

Every effort would be made to remove material (utilize it) in a timely manner rather than burn it, in order to reduce smoke emissions. In some cases, payment for the material would pay for the cost of removing it, depending on the market at the time (e.g., chip material, hog fuel). In some cases, the government may need to pay others to remove the material. In selected areas, the cost of a wood permit may pay for removal of the material (posts and poles, firewood), or a small salvage sale could be established, using light equipment such as pickups and winches.

Because ponderosa pine is a major component of these stands, treatment strategies must be planned to avoid large increases in *Ips* beetle populations. Fall and winter treatments that leave green material greater than 2-4 inches in the woods would provide an attractive food source for *Ips* and increase mountain pine beetle and western pine beetle populations. Generally, operating between July and November limits damage from *Ips*. Burning green slash, lopping limbs from tops and boles, leaving the slash in the woods to dry, chopping with a slashbuster (see page 111) or similar treatments, or utilization of woody materials down to 2 inches diameter would all help to reduce the likelihood that slash created from logging would become a food source for the *Ips* beetle.

Burn plans would be developed that would begin a process to treat the majority of the AA over the next 5 to 10 years. Site-specific burn plans would be developed at the time of the proposed treatment to address objectives and opportunities for each treatment area based on this project level analysis. Fuels treatments in this AA are aimed at reducing the threat of catastrophic fire in and around Stices Gulch. The burn unit boundaries incorporate natural fuel breaks such as roads and streams as much as possible to reduce costs, escape potential, and work required to prepare a unit for burning. Available funding, weather conditions, resource needs, and other factors may increase, reduce, or eliminate the burning in any particular year.

The majority of the area should be treated every 10 to 20 years to mimic the past occurrence of natural fire on the forest landscape within the mid-range of fire return intervals for these ecosystems.

The action alternatives do not attempt to treat every single acre, to eliminate all risks, or to return forested stands to their pre-European settlement conditions. The goal is to convert these stands toward their desired condition and reduce their susceptibility to damage. Wildfires continue to have the potential to occur anywhere in the AA.

Within each burn unit are areas that would be avoided or protected from burning, such as heritage sites or range improvements. Some units are adjacent to private property. Every effort would be made to involve as many landowners as possible in cooperative fuels treatment projects. All burning must be scheduled and coordinated to minimize conflicts with the grazing rotation system and other administrative concerns. Other sensitive areas include heritage sites, riparian areas, and areas of particular concern to wildlife, such as cover stands, travel corridors, or active raptor nests. Each burn unit would be evaluated before the final prescription is written to adapt to specific concerns and changing conditions.

INFISH Buffers

INFISH (Inland Native Fish Strategy) applies to these drainages. Riparian Habitat Conservation Area (RHCA) buffers are based on designation of this subwatershed as a non-priority subwatershed for bull trout. Buffers of 150 feet would be applied on each side of non-fish-bearing perennial streams, and intermittent streams would receive a 50-foot buffer. There are no fish known to inhabit the streams within the public lands portion of the AA. INFISH buffers apply to BLM-managed lands only for listed fish species, but are applied here for the purposes of this analysis.

No commercial thin activities are proposed within INFISH RHCAs. However, precommercial thinning and fuels reduction are planned within some RHCAs. Those activities would be conducted in a way that does not retard attainment of Riparian Management Objectives (RMOs). INFISH does not prescribe RHCA buffers for precommercial thinning. However, precommercial thinning would not occur within one tree height (of the trees being thinned) of streams in order to maintain shade. Prescribed burning would occur within RHCAs, and would be conducted when weather and fuel conditions are conducive to a low intensity burn. These burns would be ignited no closer than 25 feet from the edge of streams and would be allowed to creep downhill. Hand piling and pile burning would occur within RHCAs, but not machine piling.

B. ALTERNATIVES CONSIDERED BUT NOT GIVEN DETAILED STUDY

A “burn-only” proposal across the landscape was not developed. Fuel loading and stand densities are too high to support a prescribed burn program that does not include pre-treatment of fuels without risk to resources, including private property and improvements. In addition, burning over an extended period of time would contribute to long-term presence of smoke in Stices Gulch. There are few opportunities to complete a large-scale burn over the landscape in a short period of time due to the unpredictable weather patterns.

An alternative that would have managed the vegetation in a strip 100-200 feet in width along the interface boundary opposite private structures was not developed. The Forest Service and BLM are already cooperating with the State Department of Forestry to achieve this type of activity immediately adjacent to structures and other improvements on private land. Forest Service and BLM proposals would only extend to the National Forest/BLM boundary.

C. ALTERNATIVES DEVELOPED, including the PROPOSED ACTION

1. Alternative 1 – No Action

This alternative is the baseline for estimating effects of the action alternatives on the existing condition. Under the No Action Alternative, the Forest Service and BLM would undertake only custodial work, such as responding to fire starts (initial attack for suppression) and road maintenance. Regular road maintenance (yearly) is

limited due to lack of funding. Most maintenance would be in the form of low maintenance (blading), except in the case of emergency (e.g., road wash-outs). Open roads would be monitored, with maintenance work done as needed within the available budget. It is expected that some breached barriers would be repaired, but perhaps not immediately. Other usual forest activities would continue, such as survey and monitoring work (e.g. stand examinations, insect surveys, noxious weed monitoring).

Grazing within the allotments would remain at current levels. Noxious weed treatments would continue, particularly along State Highway 245 by the State Highway Department.

Implementation (continued status as-is) would not move the analysis area toward the desired condition described in Chapter I. No mitigations are associated with this alternative.

ISSUE SUMMARY

Air quality/smoke (Issue 1)

There would be no change to the current air quality except for unplanned incidents related to escaped trash burns and campfires, or lightning starts. Private landowners may increase the amount of burning in relation to funding opportunities through the State Department of Forestry, and this in turn would introduce additional smoke into the area periodically. Smoke would be scattered and likely small in quantity and duration, as opposed to a wildfire, which could be large and contribute tons of particulate matter and smoke into the area for more than a day.

Risk of high fire severity/intensity (Issue 2)

There would be a gradual change to the current situation on public lands as fuels continued to build up. In response to available funds through the State there may be a reduction to fire severity and subsequent intensity on private land, depending on the types of projects undertaken by landowners. Should there be fuels reduction activities on private land and not on public lands, fires on public lands may become less severe should they enter private land, offering an opportunity to control wildfires more quickly and with less damage to resources.

Resilient/healthy ecosystems (Issue 2)

Vegetation would gradually change from the existing condition (pages 25-30) for the next several decades. Individual and stands of trees would continue to become more susceptible to wildfire, insects, and disease as stocking density increases. The amount of down woody material and “fines” would increase over time, as trees shed limbs and needles, and the fire hazard would increase. Over time, fire starts would tend to become hotter and more intense, spreading faster and doing more

damage to soil, riparian zones, and trees. Large pieces of down woody material would continue to be in short supply until trees matured and died.

Risk of loss of life and/or property (Issue 3)

Actions on private land, if requested and funded, would directly affect protection of private property and improvements. Although no fuels reduction efforts would be completed on public lands under this alternative, if activities are carried out on private land, there would be an increase in personal security and potentially an increase in firefighter safety. Should a fire start on public lands, there would be a greater potential of reducing the impacts of the wildfire should it enter private land that has received some fuels reduction. However, individual attempts to reduce fire risk may be incidental and ineffective should few landowners participate.

Fire suppression would continue to be aggressively managed in cooperation with the Oregon State Department of Forestry.

2. Alternative 2 (Proposed Action)

Under this alternative, using the existing road system and constructing a temporary road (approximately one-half mile) that crosses private and BLM-managed land, the greatest amount of fuel reduction would be accomplished. A variety of fuels treatment methods would be used in conjunction with prescribed fire. Actions include (and combinations of):

hand whip felling or precommercial thinning;
pruning;
fuel removal by harvest;
hand piling or machine (grapple) piling, and pile burning;
slashbuster chipping/crushing;
underburning

for a total of approximately 3,000 acres of fuels and stocking level management. More precise figures are included in the tables on pages 57-60. Also refer to the tables for specific prescriptions.

Where necessary to achieve fuel reduction objectives, tree thinning would occur in overstocked stands. Harvest (commercial thinning) would be planned to reduce fuels outside of INFISH RHCAs in stands with relatively large (sawtimber-sized) trees; that is, where removal of understory and some overstory trees larger than 7 inches in diameter at breast height (dbh) would remove biomass and ladder fuels that contribute to the fuel hazard. Thinning would be from below (that is, leaving the largest, healthiest trees) favoring ponderosa pine and western larch as leave trees.

The average diameter of trees planned for removal would be 11 inches dbh, ranging from 7-20 inches; residual trees would range from 7-40 inches dbh. Spacing of individual trees would be 20-30 feet, leaving a range of 60-130 trees per acre, with a 30-45 percent canopy closure. Leave tree spacing would vary according to tree size, species, and site productivity. No live trees greater than or equal to 21 inches dbh would be removed. Dead trees (snags) would not be removed; some may need to be felled (but not removed) for hazard reduction. The project would be designed to reduce the need to fell snags for safety reasons. Approximately 200,000 – 300,000 cubic feet (1.0 - 1.5 million board feet) of fuel is planned for removal from an estimated 600 acres.

Thinning for fuels reduction would also occur in selected stands of smaller trees (less than 9 inches dbh), or in stands with an understory of these trees. This is commonly referred to as precommercial thinning (SPC) or fuels whip felling (FWF). Trees felled would be the relatively small diameter, suppressed trees with short crowns, those that could be ladder fuels for the initiation of crown fires (including dead trees less than 9 inches dbh), and those that compete with the relatively fire-resistant preferred species (ponderosa pine and western larch) on the site. Spacing between leave trees would be 14-25 feet, depending on the productivity and carrying capacity of the individual sites and the average stand diameter of the area proposed for treatment. Smaller diameter stands would have closer residual tree

spacing than larger diameter stands. Residual canopy closure would be in the range of 45-60 percent. Residual basal area would be in the range of 40-90 square feet.

On selected areas, existing down woody fuels and activity-created (thinning and whip felling) slash would be piled and burned. Piling within RHCAs and on slopes exceeding 30% would be done by hand. Elsewhere, down fuels would be grapple-piled and burned or a slashbuster would be used to chip/crush fuels. Both types of machine would be limited to slopes generally less than 30 percent, with small inclusions that may exceed that. Piles would be burned. Where possible, woody fuels and thinning slash would be utilized for posts, poles, firewood, or hog fuel, depending on demand. See pages 110-111 for a description of grapple piling, and page 111 for a description of how a slashbuster operates. In some cases whole-tree yarding may be more efficient in managing the slash and may be applied on selected sites (not required).

Underburning would be done either as a stand-alone treatment in selected stands, or as a follow-up in most thinning, whip felling, or piling/pile-burning areas, to further reduce natural fuels and slash. Underburning would occur within RHCAs, but lighting would not be done closer than 25 feet from the edge of a stream; the fire would be allowed to back down the slope. The burn parameters are: a maximum of 10% additional bare soil exposure; a minimum of 90% survival of overstory leave trees; and a maximum reduction in fuel loading of the smaller fuels (less than 3 inch) while meeting the first two parameters.

The underburn would likely be in early spring, though a fall burn would be considered if the prescription parameters could be met. Existing fuelbreaks, natural or otherwise (snow, creeks, trails, roads, etc.), would be used as firelines in order to reduce cost and soil disturbance. Hand fireline would be constructed to the minimum standard necessary to hold the fire where there is no existing fuelbreak. That standard is 12-16 inches width of mineral soil along the outer half of a 3-foot cleared area. Underburning would be planned at least one season after other fuels reduction work, with completion planned in 5 years. Some adjustments may be necessary due to the unfavorable weather/fuel-moisture conditions or lack of funding.

The temporary road to Unit 1 would be obliterated (ripped and seeded) following prescribed burning activities. Until the final obliteration, the road would be closed by barrier (using logs, rocks, etc. rather than earthen berm) and seeded following harvest activities. Unit 1 would be included among the first units burned so the road could be obliterated as soon as possible.

Initial attack on wildfires would continue to be aggressive. Road maintenance would be the same as under Alternative 1. Grazing levels would remain the same; range improvements would be protected. Noxious weeds within the area would be monitored for new starts and managed (sprayed or pulled).

Under this alternative, the greatest number of acres is proposed for maximum fuels reduction treatment through a variety of methods. In these managed areas, future wildfires would be of lower intensity, generally not crowning.

Biomass, both natural and activity-generated, would be utilized where possible (except where needed to maintain down wood levels). A contractor may realize a profit from collecting/salvaging material such as hog fuel or chip material, from harvest of merchantable material, or the government may need to pay to have the material removed.

Opportunities would generally be given to the public to select firewood from thinning areas on open roads and roads temporarily opened for the project prior to fuels treatment. These areas would generally remain open one season, then follow-up piling and burning would occur to the remnant fuels. Length of time material would be available for salvage to the public would depend on opportunities presented to the government to treat it. These areas would be designated special firewood areas (SFAs).

Mountain mahogany and bitterbrush would be managed to maintain or enhance their presence on the sites where the species occur, particularly within Units 101, 105, 117, 120, but also across the project area where there are scattered pockets. Competing conifers would be felled and left in place to protect seedlings.

Competing conifers up to 18 inches dbh would be cut and left in place (jack-strawed) to protect young aspen clones from grazing, or the cut conifers may be piled and then burned. A limited number of overstory aspen may be cut down or girdled to encourage the establishment of new suckers. Individual aspen trees throughout the AA would also be released where there is an opportunity. Approximately one acre (total) of the AA would be treated in this manner. Both action alternatives would include this type of aspen enhancement. The treated area would be protected from future browsing with fences (exclosures). One exclosure would be constructed along Trail Creek, T11S, R40E, Section 6, and the other along an unnamed tributary to the Powder River, T11S, R40E, Section 5.

A travel corridor would be designated and retained between the designated Old Growth (DOG) blocks. Two pileated woodpecker feeding areas would be designated adjacent to the DOGs, but would be outside the boundaries of the AA.

ISSUE SUMMARY

Air quality/smoke (Issue 1)

Piles of activity-generated slash on public lands would be burned in late fall or early winter, generating lower volumes of smoke and particulates. Underburning has the potential to generate a large amount of smoke. Utilization of down material would reduce the amount of material available to burn, and thus reduce the particulate matter and smoke generated by burning. Smoke contributed from private land activities in relation to fuel reduction would be small, likely generating the "white" smoke common for low intensity, localized fires, as described under Alternative 1.

Risk of high fire severity/intensity (Issue 2)

Under Alternative 2, the public lands portion of the analysis area would be managed specifically to reduce fire severity and intensity to a greater extent than under Alternative 3. Areas already under management (commercial and precommercial thin sites) would be included in the continued management of this analysis area for reduced fire severity and intensity. That is, underburning would be applied to these sites now as well as in the future. For those areas under management, fire severity and intensity are expected to be low, particularly if prescribed burning is practiced periodically.

Activities on private land would proceed as described under Alternative 1.

Resilient/healthy ecosystems (Issue 2)

Stocking density management and piling and burning would change the vegetation the most between the action alternatives. The changes would result in earlier achievement of ecosystem balance on warm/dry sites than under Alternative 3, which in turn would result in stands more resistant to wildfires and insects/disease. In these managed areas, future fires would be of lower intensity, generally not crowning.

Risk of loss of life and/or property (Issue 3)

Treatments under this alternative would provide breaks to wildfire progress. These breaks would link with management activities completed in adjacent areas and provide a "defensible space" (location on the landscape where fire would be expected to drop from a high intensity, severe event to something more manageable on the ground). Other activity would include treatments of varying size directly along the public/private landline (the wildland/urban interface).

Direct protection of property on private land would depend primarily on activities planned through ODF.

The tables below list the individual units and prescriptions. A map follows the tables.

Table 3
Alternative 2 Unit Activities

Unit #	Acres	Rx	Mechan. Treat.	Type of System	Burn Treat.	Notes
1	39	HTH, FWF	grapple/WTY	ground	underburn	BLM, temp road
2	2	HTH,FWF	grapple/WTY	ground	underburn	BLM
3	26	HTH, FWF	grapple/WTY	ground	underburn	BLM, long yard
4	42	HTH, FWF, HP		cable	burn piles, underburn	FS
5	32	HTH, FWF, HP		cable	burn piles, underburn	FS
6	33	FWF, HP			burn piles	FS
7	62	HTH, FWF, HP		cable	burn piles, underburn	FS
8	48	HTH, FWF, HP	grapple	cable	burn piles, underburn	FS
9	48	HTH, FWF	grapple	cable	underburn	FS
10	146	HTH, FWF, HP		cable	burn piles, underburn	FS
11	30	HTH, FWF	grapple/WTY	ground	underburn	FS
12	25	HTH, FWF	grapple/WTY	ground	underburn	FS
13	22	HTH, FWF	grapple/WTY	ground	underburn	FS
14	5	FWF, HP			burn piles, underburn	FS
15	13	HTH, FWF, HP		cable	burn piles, underburn	BLM
16	12	HTH, FWF	grapple/WTY	ground	burn piles, underburn	FS
18	30	HTH, FWF, HP		cable	burn piles, underburn	FS
19	21	HTH, FWF	grapple/WTY	ground	underburn	FS
Sub TOTAL	636					

HP = hand pile HTH = commercial thin WTY = whole-tree yarding
FWF = whip felling (similar to precommercial thinning; includes pruning, cutting small dead trees, and other fuels treatments) underburn = prescribed burning
ground = ground-based system cable = skyline system Rx = prescription
Grapple = attachment to machine to drag slash for piling (may be interchanged with slashbuster)

burn piles = burn hand or machine piles
BLM = Bureau of Land Management FS = Forest Service

Alternative 2 Unit Activities
(continued)

Unit #	Acres	Rx	Mechan. Treat.	Type of System	Burn Treat.	Notes
100	18	RB			underburn	BLM
101	17	FWF, HP			burn piles	BLM, mtn mahog.
102	3	RB			underburn	BLM
103	24	RB			underburn	BLM
104	19	FWF, HP			burn piles	BLM
105	10	Enhancement	thin conifers		underburn	BLM, mtn mahog.
106	47	FWF, HP	grapple	ground	burn piles	BLM, combo pile
107	210	RB			underburn	BLM
108	3	FWF, HP			burn piles	BLM
109	4	FWF, HP			burn piles	BLM
110	7	FWF, HP			burn piles	BLM
111	6	FWF, HP			burn piles	BLM
112	6	RB			underburn	BLM
113	19	FWF, HP			burn piles	BLM
114	103	RB			underburn	BLM
115	45	FWF, HP			burn piles	BLM
116	44	RB			underburn	BLM
117	52	FUB			underburn	FS, old growth, mtn mahog.
118	24	FWF, HP			burn piles	FS
120	82	FUB			underburn	FS, old growth, mtn mahog.
121	24	FWF, HP			burn piles	FS
122	6	FWF, HP			burn piles	FS
123	81	FWF, HP			burn piles	FS
124	188	FWF			underburn	FS
125	44	SPC, HP			burn piles	FS
126	71	FWF, HP			burn piles	FS
127	73	FUB			underburn	FS
128	52	FWF			underburn	FS
129	60	FWF, HP			burn piles	FS
130	34	SPC, HP			burn piles	FS
132	14	FWF, HP			burn piles	FS
133	2	SPC, HP			burn piles	FS
134	10	SPC, HP			burn piles	FS
135	89	FWF, HP			burn piles,	FS

Unit #	Acres	Rx	Mechan. Treat.	Type of System	Burn Treat.	Notes
					underburn	
136	18	SPC, HP			burn piles	FS
137	29	FWF, HP			burn piles	FS
138	46	FWF, HP			burn piles	FS
139	24	SPC, HP			burn piles	FS
141	44	HP and grapple	grapple	ground	burn piles	FS, combo pile
142	10	FWF, HP			burn piles	FS
143	37	SPC, HP			burn piles	FS
144	45	FWF, HP			burn piles	FS
145	42	SPC, HP			burn piles	FS
146	71	FWF, HP	grapple	ground	burn piles	FS, combo pile
147	11	HP			burn piles	FS
148	9	FWF, HP			burn piles	FS
149	24	SPC, HP			burn piles	FS
150	35	FWF, HP			burn piles	FS
151	48	FUB			underburn	FS
152	103	SPC, HP			burn piles	FS
153	16	SPC, HP			burn piles	FS
154	16	FWF, HP			burn piles	FS
155	11	HP			burn piles	FS
156	60	FUB			underburn	FS
157	29	FWF, HP			burn piles	FS
158	6	HP			burn piles	FS
159	16	FWF, HP			burn piles	FS
160	15	FWF, HP			burn piles	FS
161	18	FWF			underburn	FS
162	36	FWF, HP			burn piles	FS
163	4	FWF, HP			burn piles	BLM, exclosure aspen
164	4	FWF, HP			burn piles, underburn	BLM, exclosure aspen
Sub TOTAL	2,318					
TOTAL	2,954					

SPC = precommercial thinning
exclosure = fence constructed around selected site to exclude ungulates (cattle, deer, elk)
RB = range burn
FUB = underburn

Table 4
Alternative 2 Activity Summary
(acres)

Commercial thin	HTH	598
Ground-based*	Ground (177 acres)	
Skyline cable	Cable (421 acres)	
Underburning/range burn	FUB/RB	724
Hand piling, burning (no pre-felling)	HP, burn piles and underburn	28
Whip felling, piling, pile burning	FWF, HP, grapple, pile burn	932
Whip felling, underburning	FWF, underburn	258
Grapple	Grapple, HP	44
Precommercial thinning, hand pile	SPC, HP, burn piles	352
Enhancement (aspen, mtn mahog.)		18
TOTAL acres of treatment		2,954

Underburning occurs in most of the treatment units (pre-treated units). There is a potential to prescribe burn over 1,700 acres.

* All ground-based logging areas may be whole tree-yarded or machine-piled, as well as flatter ground (less than 30%) in cable logging systems units

The map on the next page displays the areas proposed for treatment. Some units are too small to display at this map scale. Areas without numbers would not be treated under this analysis.

insert Alt. 2/3 map

3. Alternative 3

Under this alternative, the same units and acres would be treated as under Alternative 2, however, treatments would be limited to hand work only (no machinery, other than chain saws) resulting in lower levels of fuel load treatments in several of the units. Hand treatments would be used in conjunction with prescribed fire. Actions include:

hand whip felling, piling and burning;
whip felling (thinning, pruning) with underburning;
whip felling with hand piling and burning;
hand piling and burning;
underburning;

for approximately 3,000 acres of fuels and stocking management. More precise figures are included in the tables on pages 65-67.

No commercial harvest is planned to facilitate fuels reduction; that is, no removal of biomass over approximately 7 inches in diameter (dbh) that contributes to the existing fuel hazard. Some of these trees would be cut and hand piled, but none would be removed, making fuels reduction less effective.

Leave tree spacing would range from 14 to 20 feet. Residual canopy closure would be 50-70%. The area planned for commercial harvest under Alternative 2 (approximately 20% of the treatment area) would be hand-thinned.

Fuels whip felling (FWF) is also a part of this alternative, which includes felling less desirable live trees that would act as ladder fuels and would likely would not respond to thinning release. Under this alternative, trees up to 7-9 inches dbh would be felled. Salvage would be by existing roads and would be restricted to what could be reached from the road (winching, for example, is acceptable). Utilization would be in the form of firewood, posts, and poles. Material of this size is not usually desired by commercial operators or firewood collectors.

Operations under this alternative are labor-intensive. Very little biomass, both natural and activity-generated, would be utilized. However, opportunities would generally be given to the public to select firewood from thinning areas on open roads prior to fuels treatment. Opportunities for designating special fuelwood areas (SFAs) would be the same as under Alternative 2.

No machine (grapple or slashbuster) treatment is included under this alternative. Those units identified for grapple piling or slashbuster treatment under Alternative 2 would be implemented through hand piling under this alternative. Hand piling takes more time and is more expensive, but can be very effective with the smaller-sized materials. Fuels over 7-9 inches in diameter cannot be effectively piled by hand, and would be bucked to lie flat on the ground, but left scattered, or made available for firewood, posts, and poles.

Initial attack on wildfires would continue to be aggressive. Road maintenance would be the same as under Alternative 1. Grazing levels would remain the same; range

improvements would be protected. Noxious weeds within the area would be monitored and managed (sprayed and pulled).

Although the same number of acres is proposed for fuels reduction treatment as the previous alternative, treatments would be at lower levels in several units. Stocking density management and piling and burning would change the vegetation to a lesser degree than under Alternative 2.

Mountain mahogany, bitterbrush, and aspen would be managed as under Alternative 2, including aspen exclosures.

Pileated woodpecker feeding areas and travel corridors would be delineated as under Alternative 2.

ISSUE SUMMARY

Air quality/smoke (Issue 1)

Piles of activity-generated slash on public lands would be burned in late fall or early winter, generating lower volumes of smoke and particulates. Underburning has the potential to generate a large amount of smoke. Utilization of material would not be as great under this alternative as under Alternative 2, and therefore more material would be burned. Because more acres of hand piles would be burned, smoke would persist in the area longer. Smoke contributed from private land activities in relation to fuel reduction would be small, likely generating the “white” smoke common for low intensity, localized fires, as described under Alternatives 1 and 2.

Reduced fire severity/intensity (Issue 2)

Under Alternative 3, the public lands portion of the analysis area would be managed specifically to reduce fire severity and intensity, and areas already under management (e.g., previously harvested or precommercially thinned units) would be included in the continued management of this analysis area for reduced fire severity and intensity. That is, underburning would be applied to these sites now as well as in the future. For those areas under management, fire severity and intensity are expected to be lower, particularly if prescribed burning is practiced periodically. Because removal of merchantable material would not occur, the remaining biomass would not achieve the same level or reduced fire severity/intensity as under Alternative 2.

Activities on private land would proceed as described under Alternatives 1 and 2, independently of this analysis.

Resilient/healthy ecosystems (Issue 2)

Reducing fuel loading and managing some ponderosa pine stands for vigor and reduced stress to insects, disease, and reduced susceptibility to wildfire would be accomplished, but to a lesser degree than under Alternative 2. In these managed areas, future fires would be of lower intensity, with a greater potential to result in crown fires than under Alternative 2.

Risk of Loss of life and/or property (Issue 3)

Treatment of fuel loads under this alternative would provide natural breaks to wildfire progress. The treatments would retain more dense stocking levels than under Alternative 2 because the larger diameter trees would not be removed from approximately 20% of the planned units. These treatments would provide a "defensible space" (location on the landscape where fire would be expected to drop from a high intensity, severe event to something more manageable on the ground), but to a lesser degree than implementation of Alternative 2 because more overstory would be retained.

Direct protection of property would depend primarily on activities planned through ODF.

The tables on the following pages display the units and prescriptions. The map on page 61 displays unit locations.

Table 5
Alternative 3 Unit Activities

Unit #	Acres	Rx	Burn Treat.	Mitigations	Notes
1	39	FWF, HP	burn piles		BLM,
2	2	FWF, HP	burn piles		BLM
3	26	FWF, HP	burn piles		BLM
4	42	FWF, HP	burn piles		FS
5	32	FWF, HP	burn piles		FS
6	33	FWF, HP	burn piles		FS
7	62	FWF, HP	burn piles		FS
8	48	FWF, HP	burn piles		FS
9	48	FWF, HP	burn piles		FS
10	146	FWF, HP	burn piles		FS
11	30	FWF, HP	burn piles		FS
12	25	FWF, HP	burn piles		FS
13	22	FWF, HP	burn piles		FS
14	5	FWF, HP	burn piles		FS
15	13	FWF, HP	burn piles		BLM
16	12	FWF, HP	burn piles		FS
18	30	FWF, HP	burn piles		FS
19	21	FWF, HP	burn piles		FS
Sub TOTAL	636				

Unit #	Acres	Rx	Burn Treat.	Mitigations	Notes
100	18	RB	underburn		BLM
101	17	FWF, HP	burn piles		BLM, mtn mahog.
102	3	RB	underburn		BLM
103	24	RB	underburn		BLM
104	19	FWF, HP	burn piles		BLM
105	10	Enhancement			BLM, mtn mahog.
106	47	FWF, HP	burn piles		BLM
107	210	RB	underburn		BLM
108	3	FWF, HP	burn piles		BLM
109	4	FWF, HP	burn piles		BLM
110	7	FWF, HP	burn piles		BLM
111	6	FWF, HP	burn piles		BLM
112	6	RB	underburn		BLM
113	19	FWF, HP	burn piles		BLM
114	103	RB	underburn		BLM
115	45	FWF, HP	burn piles		BLM

Unit #	Acres	Rx	Burn Treat.	Mitigations	Notes
116	44	RB	underburn		BLM
117	52	FUB	underburn		FS, old growth, mtn mahog.
118	24	FWF, HP	burn piles		FS
120	82	FUB	underburn		FS, old growth, mtn. mahog.
121	24	FWF, HP	burn piles		FS
122	6	FWF, HP	burn piles		FS
123	81	FWF, HP	burn piles		FS
124	188	FWF	underburn		FS
125	44	SPC, HP	burn piles		FS
126	71	FWF, HP	burn piles		FS
127	73	FUB	underburn		FS
128	52	FWF	underburn		FS
129	60	FWF, HP	burn piles		FS
130	34	SPC, HP	burn piles		FS
132	14	FWF, HP	burn piles		FS
133	2	SPC, HP	burn piles		FS
134	10	SPC, HP	burn piles		FS
135	89	FWF, HP	burn piles, underburn		FS
136	18	SPC, HP	burn piles		FS
137	29	FWF, HP	burn piles		FS
138	46	FWF, HP	burn piles		FS
139	24	SPC, HP	burn piles		FS
141	44	Hand pile	burn piles		FS
142	10	FWF, HP	burn piles		FS
143	37	SPC, HP	burn piles		FS
144	45	FWF, HP	burn piles		FS
145	42	SPC, HP	burn piles		FS
146	71	FWF, HP	burn piles		FS
147	11	HP	burn piles		FS
148	9	FWF, HP	burn piles		FS
149	24	SPC, HP	burn piles		FS
150	35	FWF, HP	burn piles		FS
151	48	FUB	underburn		FS
152	103	SPC, HP	burn piles		FS
153	16	SPC, HP	burn piles		FS
154	16	FWF, HP	burn piles		FS
155	11	HP	burn piles		FS
156	60	FUB	underburn		FS
157	29	FWF, HP	burn piles		FS

Unit #	Acres	Rx	Burn Treat.	Mitigations	Notes
158	6	HP	burn piles		FS
159	16	FWF, HP	burn piles		FS
160	15	FWF, HP	burn piles		FS
161	18	FWF	underburn		FS
162	36	FWF, HP	burn piles		FS
163	4	FWF, HP	burn piles		BLM, exclosure aspen
164	4	FWF, HP	burn piles, underburn		BLM, exclosure aspen
Sub TOTAL	2,318				
TOTAL	2,954				

SPC = precommercial thinning
RB = range burn FUB = underburn
exclosure = fence constructed around selected site to exclude ungulates (cattle, deer, elk)

FWF = whip felling (similar to precommercial thinning; includes pruning, cutting small dead trees, and other fuels treatments)
HP = hand pile Rx = prescription
underburn = prescribed burning
burn piles = burn hand piles
BLM = Bureau of Land Management FS = Forest Service

Table 6
Alternative 3 Activity Summary
(acres)

Underburning	Underburn, range burn	724
Hand piling, burning (no pre-felling)	HP, burn piles and underburn	72
Whip felling, piling, burning	FWF, HP, burn	1,530
Whip felling, underburning	FWF, underburn	258
Precommercial thinning, hand pile	SPC, HP, burn piles	352
Enhancement (aspen, mtn mahog.)		18
TOTAL acres of treatment		2,954

D. COMPARISON OF ALTERNATIVES

Table 7
Comparison of Alternatives

The following table displays a summary of the effects of implementing the alternatives by issue and key indicators.

Issue	Alter. 1	Alter. 2	Alter. 3
Air Quality/Smoke (Issue 1)			
Tons/acre of material burned	0	7-18	5-15
Tons of particulate in air (PM-10)*	0	400	500+
Acres of underburning	0	982	1,589
Acres of piles burned	0	1,312	1,954
Fire Severity/Intensity (Issue 2)			
Tons of existing fuels reduced	0	5-25/acre**	0-10/acre
Resilient/healthy ecosystems (Issue 2)			
Acres of thinning***	0	2,140	2,140
Commercial thins		598	0
Non/precommercial thins		1,542	2,140
Stocking composition changed	0	highest	moderate
Acres of stand structure changed (acres of stem exclusion/open canopy)	0	950 highest	352 moderate
Degree of stocking level reduction	0	high	moderate
Protection of life/property (Issue 3)			
Move from Class III toward I and II	0	high	moderate
Harvested Volume (million board feet)	0	1.0 – 1.5	0

* Particulate matter in smoke that is 10 microns in size or less.
** Depends on whether the unit is whole-tree yarded; high end of the figure is for whole-tree-yard units.
***Does not include aspen and mountain mahogany enhancement.

E. MITIGATIONS FOR THE ACTION ALTERNATIVES

Mitigations are restrictions placed on activities in order to limit potential adverse effects of those activities. Resources or areas of concern are listed alphabetically.

Botany

1. Additional field sampling within riparian areas is required on BLM-managed land prior to implementation.

2. Should any sensitive plants be discovered during project implementation, a botanist will be informed and protective measures taken (contract provision C6.25# or equivalent).

Heritage Sites

3. Any new cultural sites discovered during project implementation will be avoided and the respective Archaeologist informed, depending on which public land agency is involved (provision C6.24# or equivalent). Treatment units were designed to avoid impacts to known sites.

Insects

4. Minimize creation of ponderosa pine slash larger than 4 inches in diameter from December through June. If this is unavoidable, lop and scatter the slash. Landing piles with material 4 inches and greater in them may need to be covered with clear plastic. At landings, slash will be piled.

Noxious Weeds

5. A copy of a map showing noxious weed infestations within the AA will be attached to all service and timber sale contracts.

6. Contractors and subcontractors will be provided with weed identification material so that they will be better able to recognize the presence of noxious weeds.

7. All equipment to be operated on the project area will be cleaned prior to entry in a manner sufficient to prevent noxious weeds from being carried onto the project area. This requirement does not apply to passenger vehicles or other equipment used exclusively on roads. Cleaning will occur off public lands. Cleaning will be inspected and approved by the officer in charge of administering the project. This includes road maintenance equipment and all machinery associated with project implementation.

8. Noxious weed infestations presently occur within the prism of Forest Roads 11 and 1120250. If road maintenance activities are required on the infested portions of these roads, the equipment will be cleaned prior to moving out of the infested area.

9. If new noxious weed infestations do occur within the project area, a noxious weed inventory will be completed, and an early treatment strategy will be employed as prescribed by the respective agency's noxious weed management plan.

10. Prescribed burning and logging operations will avoid known noxious weed infestations.

11. Equipment will be cleaned for prescribed burning, fence repair/re/construction, signing, and precommercial thinning activities to reduce the likelihood of the spread of noxious weed propagules.

12. Revegetate detrimentally disturbed soils. Areas of bare/disturbed soil (including but not limited to skid trails, landings, road cuts and fills, etc.) will be seeded (broadcast or drilled). Seed will also be "non-treated;" that is, none of the seed will be treated with herbicides, fungicides, etc.

    The following seed mix is to be applied to BLM-managed land:

Idaho fescue	6 pounds per acre
Bluebunch wheatgrass	6 pounds per acre
Sandberg's bluegrass	3 pounds per acre
Blue wildrye	2 pound per acre
Pinegrass	3 pounds per acre

    If pinegrass seed is not available, increase the fescue application rate to 8 pounds per acre and the wildrye application rate to 3 pounds per acre.

    The following seed mix shall be applied to NFS lands:

Bluebunch wheatgrass or Slender wheatgrass	7-10 pounds per acre
Big bluegrass or Sandberg's bluegrass	7-10 pounds per acre
Idaho fescue	7-10 pounds per acre

    If one species is unavailable, winter wheat (*Triticum aestivum*) may be substituted at the same application rate.

13. Seed used on the project shall be Oregon-certified noxious weed-free (per *Wallowa-Whitman National Forest Integrated Noxious Weed Management Plan* protocol and the *Vale District Noxious Weed Program* and EA). Contractors shall provide the Forest Service/BLM with

documentation of seed certification prior to application of any seed on public lands.

Prescribed Burning

14. Coordination with all resources would continue through site-specific burn plan development to ensure all resource needs are considered. Optimum prescribed burning results occur, both inside and outside activity units, when conditions allow for a low to moderate intensity fire, to help reduce potentially negative impacts of fire (high intensities).

15. Snags will be protected unless they are a direct threat to safety or to fire control (see Wildlife Habitat Mitigations, below).

16. Small clumps of trees (wildlife habitat; one-quarter to 1 acre) within units that are to be prescribed burned will be protected as much as possible; fire will not be deliberately ignited within these clumps, but fire may burn into them, causing some mortality.

17. Retain woody debris greater than 4 inches in diameter in all harvest units (where it exists) to meet Regional Forester Amendment #2 guidelines. Leave woody material (greater than 4 inches in diameter) in all prescribed burn units as follows:
    7-14 tons/acre for mixed conifer stands
    5-10 tons/acre for ponderosa pine stands

18. Effort will be made to minimize exposing mineral soil during prescribed burn operations.

19. Firelines will be brushed out but will not be cleared to mineral soil depth within riparian areas.

20. Areas with unique characteristics (e.g., heritage sites, critical wildlife cover, rock outcrops, etc.) will be avoided or protected as necessary during prescribed burning operations. This also includes such items as adjacent private land and boundary fences.

21. Fire managers will comply with the State of Oregon's Smoke Implementation Plan, the Federal Clean Air Act, the Oregon Visibility Protection Plan, prepare Smoke Management Plan data, and comply with smoke management advisories.

22. Limit the prescribed burns to the "light to moderate burn" category as described in the Blue Book, page 57.

23. Do not light fires within 25 feet of streams in RHCAs or ephemeral draws with heavy vegetation (draw on east edge of Unit 120).

24. Avoid lighting fires or allowing fire to back into large pockets of mountain mahogany.

25. For prescribed burning units, use existing roads or other geographic breaks as firelines wherever possible. Use waterbar spacing guidelines on firelines as described below (page 73).

26. Minimize prescribed burning in the spring after May 1 with the objective of reducing impacts to nesting neotropical migrants and other ground-nesting birds.

Rangeland Management

27. Protect all range structural improvements (e.g. fences, stock tanks).

28. No livestock grazing will be authorized on BLM-managed land for two years following any prescribed burning.

Soils

Ephemeral Draws

29. Limit equipment crossings of the draws, adhering to Blue Book standards; sale administrator will approve any crossings.

30. Pre-designate skid trails. Adhere to Blue Book standards for skidding operations adjacent to the draws.

All units

31. Utilize pre-designated skid trails if use of existing skid trails is not possible, with an average spacing of 100 feet. Keep equipment on these pre-designated skid trails. Pre-approve operations off skid trails if two or fewer passes are made and the forest floor cover remains intact, or operation is conducted over slash.

32. Limit equipment operations to dry or frozen soil conditions (see Winter Logging below).

33. Downhill skidding will be limited to slopes less than 30%; and uphill (adverse) skidding will be limited to slopes less than 10%. If a proposed harvest unit has inclusions of slopes greater than 30 percent (downhill operations), use directional felling and winch logs up or down slope, in order to avoid heavy equipment operations on the steeper slopes.

34. Subsoil skid trails used in operations with a winged ripper (subsoiler) where soil depths permit (over 20 inches), at the direction of the sale administrator.

35. Do not skid across scablands or grasslands, unless there are pre-existing trails and locations are pre-approved.

36. Minimize access points off existing roads to units to avoid damage to road cuts and fills.

Skyline Logging Systems

37. Use one-end log suspension.

Post-Harvest Treatment

38. Maintain waterbars and other erosion control measures on skid trails or other sites within the project area that may be disturbed by post-treatment activities.

39. Use existing roads or other natural barriers as firelines wherever possible. Use the waterbar spacing guidelines on firelines as described above. Rehabilitate tractor firelines following burning as soon as possible after the burn.

40. Construct water bars on skid trails, firelines, and skyline corridors where soil disturbance is evident (and at the direction of the sale administrator), using the spacing guide below (Blue Book, page 33):

Gradient	Spacing
Under 20 %	80 ft.
20 - 39 %	40 ft.
greater than 40 %	25 ft.

41. Seed disturbed soils, skid trails, and the temporary road with the designated seed mix (page 70).

42. Scarify or subsoil and seed all landings, and mulch at the direction of the sale administrator.

43. Following harvest, close the temporary road to Unit 1 by barrier (logs, rocks, etc.) and seed the roadbed. Following prescribed burning activities, scarify (obliterate) and seed the roadbed.

44. Rehabilitate fire lines as soon as possible after burning.

Winter Logging

45. Use designated skid trails and run equipment over a slash mat if there is no snow pack; operate on frozen ground.

46. Cease operations if frozen or snow cover conditions can't be maintained or soil mixing occurs. A snow depth of 2 feet is recommended. Four to six inches of frozen ground is recommended.

Visual Quality

47. Maintain stocking levels that do no fall below the lower management zone for areas in partial retention, specifically adjacent to Highway 245 (Dooley Mountain Highway) and FR 11 (Skyline Road). Maintain a fringe or feathered effect within approximately 25 feet adjacent to these roads rather than thinning all trees along the roadsides.

48. In seen areas, flush cut stumps in cutting units within the partial retention visual foreground (Units 10, 115, 117, 120, 121, 122, 147, 148, 150, 151, 152, 153, 154,156, and 157). This mitigation applies to both pre- and non-commercial and commercial tree felling. The distance varies, depending on slope and available live vegetation to camouflage the stumps.

49. Red slash needs to be treated within a year of creation within the "seen" area.

Watershed Resources

Reference and implement as appropriate the Wallowa-Whitman "Watershed Management Practices Guide for Achieving Soil and Water Objectives (Blue Book)," 1988 for Best Management Practices (BMPs).

50. Slashbuster or grapple piling equipment will not operate on slopes exceeding 30%.

51. Within RHCAs, slash will be piled by hand only.

52. In prescribed burn units, limit the percentage of trees with diameters of 7 inches or greater killed within RHCAs to less than 10% of the total.

53. Remove all slash from roadways, ditches, and culverts. Landing slash will be piled and burned.

54. Standard INFISH RHCAs apply in these watersheds:

Perennial	150 feet
Intermittent	50 feet for non-priority watersheds (INFISH, page 50).

55. When burning in Unit 117, do not light fire within the RHCA adjacent to Alder Spring (T11S, R49#, Section 19, SWNE).

56. Design treatment prescriptions to maintain stand density equal to or above the minimum stand density (lower management zone) for the plant association.

57. Store lighting fuel at least 300 feet away from stream channels and use absorbent pads to contain spills at fuel sites.

58. No landings will be located within RHCAs of perennial streams. In the case of intermittent and ephemeral drainages, landings will be at least 100 feet from the low point of the intermittent or ephemeral drainage, where topographically feasible. Where possible, they will be located on old landing locations or other previously disturbed ground.

59. On BLM-managed land, Standard Design Features for Timber Harvest, Sale Design, and Road Construction shall be followed as listed in the BLM RMP/ROD (pages 36-40).

Wildlife Habitat

60. Large diameter snags (18 inches dbh) will be protected to the extent possible when designing units on the ground. Marking will take into account the potential for safety hazards that snags may pose to forest workers. This may mean not marking green trees for removal in order to protect the snags.

61. If it becomes necessary to fell snags over 12 inches dbh, they will remain within the treatment unit as down logs (CT6.404 or equivalent). Snags will not be removed as part of a harvest activity.

62. Snags and down log habitat will be managed at least to the 100 percent level where this level is currently present. Certain areas within the AA will not meet these levels because the snags and down logs are not present (e.g., harvest units from previous sales) and will be maintained at the existing levels.

63. Before prescribed burning, units will be walked-through to determine the need to protect large snags (greater than 18 inches dbh) and down logs greater than 21 inches in diameter at the midpoint by pulling back slash and natural fuels.

64. Protect/retain the topped trees in Units 4, 8, 10, 12 and inoculated trees in Units 9, 125, and 128.

65. Keep precommercial thinning slash away from well-used (apparent) game trails.

66. Viable cover within 75 feet of open and closed roads or large openings will be retained. In cases where retaining cover will endanger the defensibility of the unit during wildfire, the cover will be removed.

67. Trees greater than 9 inches in diameter that contribute to canopy closures greater than or equal to 50 percent will be maintained as a travel corridor between the Alder and Road 11 DOG. If site potential does not allow 50 percent or greater canopy closure, maintain canopy closures within the top one-third of site potential.

68. Precommercial thinning activities should maintain cover and structure for big game hiding cover and nesting/breeding habitat for neotropical birds. This would be accomplished by leaving and protecting small clumps (<1 acre) of dense grand fir and other regeneration scattered throughout the unit or along ephemeral draws during harvest/thinning/whip felling and burning. Clumps would not be located where crowns are intermingled within the crowns of large ponderosa pine residual trees.

69. Cull (unmerchantable) grand fir trees within treatment units or in ephemeral draws should not be felled. If they are felled for safety purposes, they will be left in place.

70. Special or unique plants, such as mountain mahogany, antelope bitterbrush, aspen, cottonwoods, and Scouler's willow will be managed to ensure their continued/enhanced presence within the landscape. This management will include commercial thinning, whip felling/precommercial thinning, and prescribed burning, depending on the alternative.

71. Conifers will initially be retained around/adjacent to mountain mahogany clumps.

72. Slash will be pulled back 10 feet from mature mountain mahogany patches and prescribed fire will be allowed to creep into patches of mountain mahogany. Primarily, the affected units are 4, 10, 11, 12, 100, 103-111, 117, 119, 124, 157, and 158.

73. Prior to beginning management activities in the spring and early summer (third week of May through the first week in July), the area will be inspected for the presence of calves and fawns. If any are found, people implementing the activity (Forest Service/BLM/contractor) will coordinate options with the project leader for areas in the vicinity of the young until the mother has had time to remove the young from the activity area.

74. Unit design and implementation of thinning and fuel reduction will retain connections with hiding cover in at least two directions between rock outcrops and nearest cover.

75. If an active raptor or pileated woodpecker nest is found during unit layout, it will be protected and buffered from planned activities.

76. Should an active goshawk, pileated woodpecker, or raptor nest be found within units on BLM-managed land (Units 1, 2, 3, or 15), implement Contract Provision C6.315# to protect the site. Operations near the site will be restricted from April 15 through September 1. Should no active nests be located during operations, the clause will be waived.

77. Surveys to determine occupancy and nesting locations for northern goshawk will be conducted prior to management activities on BLM-managed lands. Fuels reduction activities would be allowed in goshawk nesting areas, however, seasonal restrictions would be followed.

78. If an active raptor or pileated woodpecker nest is discovered within a treatment unit, the Contract Administrator will seek cooperation from the contractor to delay work activities in this area until the young have fledged.

79. The Contract Administrator will place “Wildlife Tree” signs on selected snags along closed roads that will be temporarily opened for management activities to deter woodcutters from removing the newly accessible snags.

80. Roads that are closed under the District’s Road Management Plan should remain closed through sale activities. Roads that are opened for harvest and haul should be closed during periods of non-use that exceed 14 days.

F. MONITORING

- Evaluate browse species for recovery success following treatments.
- Evaluate mechanical fuels treatment units for the need to perform follow-up prescribed burning.
- Monitor prescribed burns the following spring on NFS lands through ocular estimates to determine the potential for changes to livestock use.
- Activity units would be evaluated after treatment to ensure predicted treatments were accomplished, mitigations were applied, and to verify fuels treatment needs.

- All prescribed burning would be monitored for compliance with smoke management requirements as issued by the State of Oregon Smoke Implementation Plan.

- All prescribed burning would be monitored in accordance with the Tri-Forest Burning Monitoring plan.

- Monitoring would be done to ensure best management practices (BMPs) were implemented (sale administrator and hydrologist).

- Areas of high disturbance, such as roads, skid trails, landings, and burned slash piles would be inspected for noxious weed infestations periodically following the end of the project.

III. ENVIRONMENTAL EFFECTS

This section describes the anticipated environmental consequences on the resources if the alternatives are implemented. The general action of each alternative is addressed, such as logging, fuels treatment, etc.

Direct effects are caused by an action and occur at the same time and place. Indirect effects are caused by an action and occur later in time or farther removed in distance. Cumulative effects are impacts produced by the action and might add to other past, present, and reasonably foreseeable future actions, and can take place over a period of time (40 CFR 1508.7 and 1508.8).

Where appropriate, resource information also addresses time of impacts (duration), relation of the impacts to other resources (context), and severity (intensity), all of which are factors of significance.

Resources are addressed alphabetically in the existing condition section of Chapter I. They are addressed in the following order in this chapter, with issue discussions highlighted in the appropriate resource area discussion.

ISSUES

Air quality/smoke
Risk of high fire severity/intensity and
Management of vegetation to produce healthy and resilient ecosystems
Risk of loss of life and/or property

RESOURCE CONCERNS

Soils Resources
Watershed Resources
Fish Resources
Forested Vegetation Condition
Fire and Fuels Management
Wildlife Habitat

Other resources that do not change because of mitigation or no impacts to that resource are not addressed in the effects section (e.g., botany, heritage resources).

The No Action Alternative is addressed first, followed by the action alternatives.

A. Soils Resources

Introduction

The productivity of forest soils can be adversely affected by removal of nutrients and alterations in the soil structure. Removal of nutrients can occur through the removal of wood products, erosion, site preparation, and through burning. The effects of soil disturbance on soils productivity and the duration of adverse effects largely depend upon the type of disturbance. Disturbances such as roads and ditches generally are permanent because the soil structure is severely altered during construction. Compaction from tractor yarding generally lasts for several decades (*Froehlich and McNabb*, *1984*), thereby reducing productivity. Soil surface erosion rates following timber harvest remains elevated for approximately two to seven years, depending upon the yarding method (*USDA Forest Service*, *undated*).

The effects of nutrient removal through erosion, burning, grazing, site preparation, and woody material removal can be short-lived or long-lasting, depending upon the extent, duration, and intensity of the disturbance. Although grazing does not create large areas of soil displacement, puddling and compaction, it does impact small areas where the livestock tend to concentrate, such as riparian areas, springs and other seasonal wet or moist areas.

Management activities can result in direct and indirect effects upon the soil resource. Direct and indirect effects may include alterations to physical, chemical, and/or biological properties of soils. Physical property concerns commonly include structure, density, porosity, infiltration, permeability, water holding capacity, depth to water table, surface horizon thickness, and organic matter size, quantity, and distribution. Chemical property concerns commonly include pH, nitrogen availability, and carbon content. Biological concerns commonly include the abundance, distribution, and productivity of the many plants and animals that live in the soil and in the organic detritus on the soil surface.

Processes known to cause the greatest adverse effects on soil physical, chemical, and biological properties include soil compaction, displacement, puddling, burning, erosion, mass wasting, and deposition/sedimentation. Direct effects of management activities commonly include compaction, displacement, puddling, and burning, which may include loss of organic ground cover. Erosion, mass wasting, deposition/sedimentation, and changes in water table, soil biology, organic detritus recruitment, and fertility (such as the fertilization effects of ash the year after a light intensity fire) usually occur as indirect effects.

The primary concern is the impact of direct and indirect effects of management activities on soil productivity and soil stability (*Forest Plan Soils Standard and Guideline #1*). Although management activities can have both positive and negative effects on soil productivity and stability, most effects are negative.

The magnitude of change in soil productivity or soil stability is influenced by the degree, extent, and duration of adverse soil conditions within and adjacent to each

activity area. Degree refers to the magnitude of change in soil properties, such as an increase in bulk density or a decrease in macro-porosity, and the depth to which those changes occur. Extent refers to the area affected by such changes. Duration refers to the length of time such changes may persist on or adjacent to the site.

Minimizing adverse changes in soil productivity or soil stability associated with any action can be accomplished by managing the degree, extent, or duration of adverse soil conditions within and adjacent to activity areas. This may be accomplished through mitigations that may include minimizing soil disturbance, minimizing detrimental soil conditions within disturbed areas as defined in *FSM 2520 R6 Supplement 2500-98-1*, and soil restoration activities.

Environmental effects documentation presents the scientific and analytical basis for the comparison of the alternatives displayed in Chapter II. Probable effects of implementing each alternative are disclosed for the affected resources. The probable effects are described in the context of direct effects, indirect effects, and cumulative effects.

The entire soils report is available in the analysis file and is summarized in this document. The analysis in this chapter references discrete quantities of area to be treated by alternative. Many of these values would best be represented as a range of values so as to show that components of the ecosystem cannot be precisely quantified. However, to facilitate a comparison of environmental effects among alternatives, the mid-point of these ranges is used to quantify the proposed treatments.

Alternative 1

This alternative provides a description of baseline conditions from which other alternatives can be compared and the current conditions on the project area.

The potential for high intensity wildfires in the absence of density management would remain elevated. In the event of a wildfire, the potential effects upon soil productivity, extent of post-fire soil erosion, and the ability of the soil to recover from these impacts would depend upon the intensity and duration of the fires. The ability of the soil to recover depends upon the soil's residual organic content, post-fire erodibility, and the speed with which ground cover is established. Stand-replacing wildfires could reduce long-term site productivity of the soils by removing large down woody material and surface organic matter. Surface soils and their associated nutrient reserves could also be lost through increased erosion as a result of cover loss and reduction in infiltration capacity.

There would be no direct increase in detrimental soil conditions (DSCs) such as compaction, displacement, or puddling, if this alternative were implemented. In the absence of land management, soil productivity within these units would continue to improve (over 20 to 50 years or longer). Compaction and displacement is being ameliorated through natural restoration processes, for example freeze/thaw, tree root expansion, ground cover root mass expansion, and organic matter, leaf, and

litter layer development.

The Stices Gulch Interface AA is generally a stable landscape. However, if a stand-replacing wildfire were to occur, high temperatures, long flame lengths and residence times, litter and duff consumption, and ground cover removal could result in soil crusting, water-repellent soils, and increased loss of ground cover could cause accelerated surface erosion. These situations could, in turn, lead to reduced site productivity, increased sediment production, and reduced water quality. The likelihood of increased mass failure following a stand-replacement fire event within the AA is low given the stability of the area.

Cumulative Effects

There would be no direct increase in DSCs (compaction, displacement, puddling) under this alternative. Existing conditions (pages 21-24) would remain the same in the short term. Mechanical soil damage that currently exists as a result of previous entries would recover naturally over the next 20 to 50 years, or longer.

Evidence of compaction related to skid trails and displacement related to mechanical fuel treatments is common in the NFS parcels. The BLM parcels do not indicate evidence of management in the recent past, other than remnant stumps. This existing condition is being ameliorated through natural processes including expansion of tree roots, grass and ground cover roots, and the addition of organic matter.

Soil structure and productivity would continue to be altered by on-going activities. On-going activities in the subwatersheds include, but are not limited to, livestock grazing, hunting and recreation use, firewood collection, and vehicle use of roads when the roads are wet or soft. These actions are dispersed throughout the AA, with detrimental soil damage most evident where use is concentrated. Since these actions are on-going, detrimental soil conditions associated with these activities are not being ameliorated and would persist into the future until healed naturally.

Alternative 2

The proposed actions consist of commercial and precommercial thinning, prescribed burning and mechanical fuel treatment.

Soils issues relating to soil productivity and disturbance will be analyzed by each potential ground-disturbing activity proposed. Elements that affect soil productivity include: sheet and rill erosion, gullying and landslide erosion, organic matter loss, and the amount of large woody material left. Disturbance elements include compaction, displacement, puddling, and severe burning.

Direct and Indirect Effects

Direct impacts occur from sheet and rill erosion, gullying and landside erosion, soil compaction, displacement and puddling. Indirect effects are organic matter and

large woody debris.

Sheet and Rill Erosion--Soil erosion is a natural process that can be accelerated by land management activities. Soils on steep slopes with poor vegetative cover and lack of structural development are more susceptible to erosion than are soils on flatter terrain. Vegetation protects the soil surface from raindrop impact, dissipates the energy of overland flow, and binds soil particles together.

Slopes proposed for mechanical treatment (i.e., grappler, slashbuster, or tractor or forwarder logging) are generally below 30 percent and have well established existing ground cover. Major soil complexes represented within the AA exhibit moderately permeability rates and are well drained. It is not anticipated that the proposed mechanical treatment activities would increase surface erosion given the high infiltration rates, relatively flat topography, and density of effective ground cover. Mitigation measures are imposed to minimize the potential extent of bare ground exposed during skidding, mechanized fuel reduction operations, or skyline yarding (pages 72-74).

Ground cover on lightly used summer skid trails (1 or 2 passes) or winter skid trails is not anticipated to be reduced along the entire length of the trail because operations would occur over slash mats or snow. Operations would cease if the snow pack is broken or wet conditions are encountered. Protection of ground cover would reduce surface erosion and protect soil productivity. Ground cover along the greater length of main skid trails used would likely be reduced. This impact would be mitigated through the use of slash mats, designating skid trails, one-end log suspension, and ceasing operations if wet conditions are encountered.

Main skid trails would be reviewed for restoration needs following harvest and fuel reduction treatments. Restoration may include constructing water bars, creating brush sediment traps, seeding or planting, tilling or subsoiling, or doing nothing, depending on the extent and amount of ground cover reduction. In the long term (greater than 5 years) it is anticipated that ground cover would become re-established, with or without post-activity restoration actions.

All slopes are proposed for reintroduction of landscape fire (ranging from low to moderate intensities). Surface soil erosion potential is not changed as a result of fire (*Bliss, 2000*). Natural fuel reduction prescriptions would call for light underburn intensities. More than 80 percent of the burned area would exhibit light burn conditions. Lightly burned vegetation would exhibit the following characteristics:

- Surface duff layer charred by fire, but not removed.
- Less than 15 percent moderately burned and less than 2 percent severely burned sites (*USDA, Forest Service, Wallowa-Whitman N.F. 1988 and Forest Plan, Page 4-22*).
- Root crowns and surface roots of perennial grasses are not dead; current and previous year's growth may be completely consumed.
- Short, thin-barked shrubs and trees are often burned or needles/leaves are heat-killed. Trunks of large trees may be lightly charred, but the cambium

layer is unaffected. Needles of lower branches may be heat killed.
- Short-term loss of some grass and litter cover; long-term loss of some shrub and short tree cover, no loss of large tree canopy covers.
- Duff, crumbled wood, or other woody material is partially burned, logs not deeply charred.

It is not anticipated that prescribed fire of low intensity would result in long-term alteration of soil chemical or physical properties. Detrimental soil conditions resulting from prescribed burning under controlled conditions would be small, as burning activities would not be initiated if burn parameters were outside prescription. The highest likelihood of occurrence of detrimental soil conditions would be in localized areas of heavy fuel concentrations (primarily associated with harvest-generated slash or old slash piles). Long flame lengths and high residence times could cause severe burning of soils. However, severe soil conditions are not expected to exceed 2 percent of the land base, be well distributed throughout treatment areas, and be relatively small in size. As such, discrete areas of severely burned soils would recover naturally over time.

Road maintenance would improve soil productivity in the long term. Road maintenance reduces road-related sediments by shaping the roadbed and cleaning drainage structures.

Gullying and Landslide Erosion–As noted earlier, the Stices Gulch Interface AA is generally a stable landscape. The potential for landslides to occur is generally low. Intermittent tributaries and ephemeral draws are found within most units. Many of the channels have been used as skid trails in the past. Despite the past logging and skidding operations, no evidence of headcutting or gully formation was noted. The swales have good establishment of vegetation and ground cover and are not showing signs of conversion to intermittent channels. Vegetation regrowth and biological activity is breaking up the surface compaction (0-4 inches) of soil on the historic skid trails. Mitigation measures are prescribed to protect ephemeral drainages (page 72).

It is not anticipated that prescribed fire (landscape and activity slash burning) of low intensity would result in increased gully and landslide erosion.

Organic Matter and Large Woody Material–Organic surface litter and duff currently approximates 0.5-1.0 inches in depth within the units proposed for treatment. Amounts of down woody material are variable across the entire AA. Vegetation management (logging) would retain down wood at levels specified in the "*Regional Forester's Amendment #2" supplement to the WWFP)*. All sale and burn activities would maintain snags (mitigations, pages 71, 75-76) and green tree replacement trees.

Fuel treatments and prescribed fire may result in shortages of down wood in the short term, particularly small diameter material. However, prescriptions would attempt to minimize consumption of large diameter logs by achieving low fire intensities. Burning prescriptions would be designed so that consumption would not

exceed 3 inches total (1½ inch per side) of diameter reduction in the large logs (*Forest Plan*). Depending on specific conditions during burning, log consumption would occur in a mosaic pattern.

Fuel treatments may also result in the short-term reduction of surface soil organic matter. Under light burn intensities, the litter/humus layer is expected to remain partially intact. Potential surface erosion would not change as a result of the burn.

Whole-tree yarding would have an impact on the organic matter left on the site. Under this method of logging nearly all the limbs associated with a felled tree are removed from the unit with the log and concentrated at the landing. In the long term (greater than 3 years) there would be a reduction of accumulated organic matter on the unit.

Soil Compaction and Displacement--Harvest equipment has the potential to cause detrimental soil compaction and displacement and subsequently reduce site productivity. Soil compaction is the result of an increase in the density of the soil due to applied loads, mechanical pressure, or vibration. Soil compaction increases soil density, reduces soil porosity, and consequently affects air and water movement within the rooting zone. This limits root development and affects the volume of soil available for plant growth.

Displacement is the physical removal of soil from one place to another by mechanical forces. Removal of surface soils (displacement) reduces amounts of available nutrients and affects soil biological activity**.**

The use of lightweight equipment on designated and existing skid trails is not anticipated to measurably increase detrimental soil conditions. Based on the type of equipment used and the operator's and sale administrator's adherence to mitigation measures, it is the professional judgment of the soil scientist that the activities proposed would result in no measurable increase in detrimental soil conditions. Naturally occurring restoration would move the soils in a trend towards improvement.

The grappler used in piling produces little change in soil bulk density as it is similar to low ground pressure equipment used in harvesting.

Specific harvest and yarding equipment has not been specified for this alternative. However, impacts on soils of commonly used equipment has been documented.

Largest increases in soil bulk density generally occur during the first five passes when using feller/bunchers or rubber tired/tracked skidders. However, detrimental compaction was not encountered after 1-4 passes of the feller/ buncher or conventional skidders (*Zaborske, 1989*). *Froehlich (1978*) found that soil density at the 2-inch depth increased greatest during the first two passes with little change in density after six passes. At the 10-inch depth, *Froehlich (1978*) found little change in soil bulk density regardless of the number of passes. *McNeil (1996*) found that feller/bunchers compacted 10 to 20 percent of the activity areas where they were

used on the Malheur National Forest in eastern Oregon. Degree of compaction from summer logging over dry ground was significantly reduced when equipment was operated over slash (*Froehlich, 1978; Zaborske, 1989*). Harvester/forwarder operations on the Limber Jim Fuel Reduction Study conducted on the La Grande Ranger District resulted in detrimental soil conditions on 3 to 8 percent of treated stands. By comparison, harvester/skidder operations resulted in detrimental soil conditions on approximately 20 percent of the treated areas (*McIver 1996*).

Direct effects to upland soils can occur from the act of skidding fallen logs across the ground behind a rubber-tired skidder as the logs are taken to a nearby landing, and from skyline operations that do not fully suspend logs. Most often, soil disturbance from skyline operations occurs at the tail-hold in the bottom of the unit, and at the top of the unit just below the skyline yarder, as cabled logs are only suspended from one end. This results in “furrows” of disturbed ground, which subsequently exposes minerals soils to erosive forces, resulting in possible overland sediment flows.

Effects of mechanical crushing include soil productivity loss through compaction or displacement. If mechanical crushing treatments were utilized on the slash, equipment would be limited to existing skid trails on slopes less than 30 percent, with a slash mat sufficient to buffer the equipment weight. These skid trails would be the same ones used for harvest operations. No observable change in soil compaction or displacement was noted with equipment use over a sufficient slash mat.

Whole-tree yarding may increase detrimental soil compaction, if new skid trails are added to the harvest units to accommodate tree retrieval. If the current equipment can utilize existing skid trails, then there would be no increase in detrimental soil compaction. Landing sites would need to be expanded to accommodate the accumulated slash, therefore increasing detrimental soil compaction to landing sites.

Research indicates that winter logging causes minimal detrimental soil disturbance (*Philipek, 1983 and 1985). Philipek (1983 and 1985*) summarizes monitoring reports from a variety of national forests. Winter logging was found to have little to no effect on the soil surface displacement or ground cover removal. The studies reported did not address compaction, although one report indicated a need to maintain adequate snow cover and frozen soil to prevent formation of soil compaction below the frozen ground level. In all cases, administration was key to successful operations.

Under Alternative 2, the areal extent of soil compaction associated with operations conducted within the commercial thinning and mechanical treatment units are not anticipated to measurably increase because of application of mitigation measures. These measures would be required to minimize detrimental effects, ensure protection of the soil resource, and comply with the Forest Plan under Alternative 2.

It is anticipated that the harvest units could experience a 3 to 5 percent increase in

detrimental soil conditions (*McIver 1996*), even with application of mitigation measures. Adherence to the aforementioned mitigation measures is integral to the validity of this assumption. Unacceptable compaction and displacement is not anticipated to be of concern within the remainder of the proposed treatment units.

Cumulative Effects

In addition to the identified effects of the proposed actions (commercial thinning, precommercial thinning, and natural fuels reduction), there would be additional cumulative effects on the soils resource as a result of the on-going activities within the AA. Activities of hunters, firewood cutters, and other forest users, and domestic grazing contribute to the amount of soil damage within the Stices Gulch project area. These activities would continue into the future. The human impact to the soils resource would be concentrated in discrete areas and would not likely add appreciable amounts of soil damage above present levels.

Cumulative effects of domestic grazing associated with underburning (as it relates to surface erosion)

The Forest Service Range Administrator would monitor forage conditions of burned areas the following spring to determine if adjustments in livestock grazing patterns are warranted considering the vigor and density of herbaceous vegetation regrowth and wildlife use of the burned area. Vegetation response following the prescribed re-introduction of fire within a similar biophysical region (Wapiti Vegetation Project, Wallowa Valley Ranger District) exceeded expectations. Surface soil erosion was not changed as a result of the prescribed burn and grazing patterns were not interrupted as a result**.** The BLM RMP/ROD provides for resting an area for 2 to 5 growing seasons following vegetation manipulation (*RMP/ROD page 15*).

Alternative 3

This alternative does not include any commercial thinning or machine piling. Hand piling would be used under this alternative, as well a prescribed burning (underburning). The lack of mechanical treatments results in few impacts to soils.

Effects of prescribed burning are addressed above, pages 84, 85.

B. Watershed Resources

Alternative 1

There would be no direct or indirect effects to water quality associated with the No Action Alternative. Water temperature would not be affected since no vegetation would be removed. No roads would be built, closed, or decommissioned under this alternative, and current road maintenance would continue. Sedimentation from existing roads would continue at the current rate. No changes to current peak and/or base flows from timber harvest and/or road building would occur. No

riparian fencing along two stream segments of BLM-managed land would occur. It would take years longer for the desired condition to be achieved.

Chances of having a large, uncontrolled wildfire in the AA are highest under this alternative, since none of the existing fuels would be treated. A wildfire could have future cumulative impacts to water quality by removing shade, killing vegetation that stabilizes stream banks, and increasing sedimentation. These impacts could happen under any alternative should a wildfire start or move into the AA, yet these risks would be greatest under the No Action alternative.

Alternative 2

Actions under this alternative include precommercial and commercial thinning, hand and machine piling of slash, and prescribed burning to meet the overall objectives: fuel reduction, returning stocking levels to historic levels, and to contain wildfires easier with less damage to resources. To facilitate commercial thinning, a temporary road is proposed for construction to access one commercial thin unit (Unit 1). This unit is located on BLM-managed land and the temporary road is approximately one-half mile long and crosses private and BLM-managed land.

Direct, Indirect, and Cumulative Effects

No direct impacts to the watershed resource are anticipated under this alternative.

Indirect and cumulative impacts to the watershed resource could include changes in peak and base flows, changes in stream shade and temperature, changes in snow accumulation, and increases in sediment.

Harvesting of trees can increase openings in the forest canopy, which in turn can lead to greater accumulations of snow in these openings than would occur in an undisturbed forest. Warm rain-on-snow events can melt this increased snow pack quickly and result in higher than normal flows. Since this is a thinning, not all trees would be harvested and any openings created in the forest canopy would be small. Any increase in snow pack due to these openings would not be expected to be large. The trees left on site are expected to respond to the thinning with increased growth due to the reduction in competition. This growth from the largest trees left on site would result in this incremental chance of increased snow pack to be temporary. Due to the increased growth and vigor of the trees that were left on site, and the fact that the thinning of the trees is designed to return the stands to a more natural open stand, any difference in snow accumulation and peak stream flows before and after thinning would not be measurable.

Increases in base flows due to vegetation removal are expected to be minimal and short-lived. An increase in base flow can be expected after tree harvesting in forested areas because the trees that are harvested are no longer using water from the site. However, during thinnings, not all trees are removed, and the remaining trees may use more water than they had previously. Also, an increase in brush and grass can be expected, which would utilize more water. So, for these reasons, any

increase in base flows due to the thinning activities would only be expected to last for two to three years before the rest of the trees on the sites and any new vegetation that gets established would use up this increase.

Stream temperatures are not expected to be impacted by actions implemented under this alternative. No commercial thinning would take place within the RHCAs, and where precommercial thinning occurs in an RHCA, no trees would be cut within one tree height of the stream. These project design features would ensure adequate shade to the stream channels. In addition, the majority of the RHCAs within the area that have precommercial thinning planned within them are adjacent to intermittent or ephemeral streams where there is no surface flow during the summer when stream temperatures are of concern.

Underburning has a chance to affect stream temperatures, since prescribed fire is allowed within RHCAs. However, ignition would not take place within 25 feet of the stream channels, the burn plan provisions would call for at least 90% of trees to survive during underburning, and again, most of the units planned for prescribed burns are adjacent to intermittent or ephemeral channels, not perennial streams.

Timber harvest can also increase sediment due to increased exposure of bare ground.

The precommercial thinning planned under this alternative should not increase sediment because no soil is exposed during these activities. Commercial thinning can increase soil exposure when the logs are yarded to the landing. Ground-based equipment can displace soil and remove vegetation that is growing. This disturbance can happen during yarding operations or during the piling of slash with mechanized equipment. Cable yarding can also increase soil exposure when the logs are yarded because one end of the logs would be dragged along the ground surface. Increases in sedimentation due to harvest activities is expected to be negligible because using designated skid trails, adequate deflection during cable yarding, installation of waterbars on skid trails after yarding, and the fact that no equipment would be operated in RHCAs. The RHCAs would operate as buffer strips to filter any sediment that may come from a harvest unit before reaching a stream channel.

Prescribed burning can also increase the amount of bare ground, which can lead to increased sedimentation. Due to the project design features and mitigation, no significant impacts to water quality are anticipated.

Timber hauling on existing roads can also increase sedimentation from the road surface, especially if the hauling occurs during wet conditions, which can cause rutting in the road surface, which in turn channels water down the ruts. A small, short-term increase in sedimentation is expected from the roads due to increased use and maintenance. This increase could occur during hauling and the following wet season. Proper maintenance of the road, such as grading to prevent ruts and installation of waterbars, can reduce this road surface erosion. Maintaining

vegetation between roads and streams as well as limiting hauling to the dry/frozen season can also reduce potential sediment delivered to the streams.

The temporary road proposed on BLM-managed land should have a minimal impact on the watershed resource. It avoids an ephemeral draw and is not full bench. Since this is a temporary road, it would only be used for the proposed project and then would be ripped, seeded, and blocked to future access so that there would be no continuous sediment source. The road density within the analysis area would stay the same and no additional stream crossings would be installed.

Roads can also intercept subsurface water and increase peak and base flows by disrupting water routing. Changes in peak and base flows related to this temporary road construction are expected to be minimal due to the placement of the road, no crossings of intermittent or perennial streams, and the majority of the road does not have a steep cutbank which would be more likely to intercept water.

Since all of the stands proposed for commercial treatment are retaining a basal area and crown closure which is representative of what occurred naturally for this eco-type, these stands should still be hydrologically recovered even after harvest. As the acreage of hydrologically un-recovered stands would not increase, no measurable impacts to changes in peak and/or base flows are anticipated.

There should be no impacts to the spring that is a domestic water source in the NW/NE of Section 19. This spring source is located between Highway 245 and Stices Gulch road, and no activity is planned adjacent to this spring. The other spring that is in the SW/NE of Section 19 (Alder Spring) is adjacent to Unit 117 that is planned for an underburn. Alder Spring is also a domestic water source. Since no vegetation is planned for removal or harvest there will be no impacts to this spring from harvest activities or machinery. Underburning adjacent to this spring could increase sediment by killing vegetation adjacent to the spring and increasing the amount of bare ground. However, mitigations include not lighting within the RHCA adjacent to this spring, which will provide a buffer strip to filter any sediment that may come from the underburned unit. With this mitigation, as well as the prescribed burn prescriptions to limit the amount of bare soil exposed, and the protection of the RHCA, and adverse impacts to this spring should be negligible.

Protecting the water rights in turn protects the waterlines under special-use permit. These waterlines generally follow the spring drainages, and no lighting or commercial harvest occurs in the RHCAs.

Two small riparian exclosures are planned to be installed on BLM-managed land, one along Trail Creek and the other along an unnamed tributary to the Powder River. These exclosures would be installed to restrict ungulate (domestic livestock and wildlife) grazing in the riparian areas and to promote aspen regeneration. Installation of these exclosures would improve riparian habitat, vegetation, and bank stability in these areas. Increases in vegetation and bank stability would decrease sedimentation, although this decrease in sediment would not be

measurable because of the small acreage of riparian area and length of stream channel involved with the exclosure.

Alternative 3

All of the units proposed under Alternative 2 are also planned for treatment under this alternative. However, since no commercial or mechanical (other than chain saws) activities are planned, there would be no yarding, timber hauling, or mechanical slash piling.

Direct, Indirect, and Cumulative Effects

Impacts to stream temperature would be the same as under Alternative 2 since precommercial thinning is still planned within some RHCAs.

Impacts to sedimentation would be slightly reduced from Alternative 2, as there would be no yarding, no timber hauling, no grapple piling of slash, and no temporary road construction. Prescribed burning is still planned and can still increase the amount of bare ground over what is presently existing. As under Alternative 2, increase in sedimentation due to prescribed burning is expected to be minimal due to project design features and mitigation measures.

Since trees would be cut, impacts to the timing of peak/base flows can still occur. Implementation measures for this alternative would limit the size of trees cut (less than 7 inches dbh), however, the number or size of openings can still be increased, which can influence the accumulation of snow. As only the smallest trees are being removed, the residual crown closure is expected to be 50-70%, the basal area remaining would be within the historic range of variability for hydrologically recovered stands, and there would be no increase in the acreage within the stand initiation stage. Impacts to peak/base flows should be negligible.

Impacts to the two springs in Section 19 would be the same as under Alternative 2. There would also be no impacts to an recorded water rights or improvements under special-use permit.

C. Fish Resources

Alternative 1

Direct Effects to Redband Trout

There are no direct effects to resident redband trout residing in lower Stices Gulch under this alternative. Existing aquatic/riparian conditions would be maintained in the short-term.

Indirect Effects

In the long term, taking no action to reduce crowded conifer stands within the Stices Gulch AA would adversely affect redband trout residing in lower Stices Gulch, as the risk of stand-replacing wildfires within the Stices Gulch AA would increase with each passing year. Wildfires tend to be very hot and intense, causing long-term damage to uplands and riparian areas by exposing mineral soils and removing vegetation, which would otherwise provide shade and large woody material (LWM) to adjacent streams. As discussed in the Fire/Fuels section, the Stices Gulch AA is rated as "high risk" as determined by the Wallowa-Whitman National Forest Fire Risk model. This particular model takes into account fuel models, slope, aspect, elevation, stand structure, fire occurrence and proximity to private land. A rating of "high risk" would indicate that the conditions are suitable for a large, high-intensity wildland fire to occur within the AA.

Should a stand-replacing fire occur within the AA, indirect adverse effects to resident redband trout would include warming of in-stream water temperatures due to the loss of stream shade; the simplification of in-stream habitat due to the loss of pool habitat from excessive amounts of sediment filling in existing pool habitat; and the interruption of LWM recruitment to adjacent streams within the Stices AA. The loss of pool habitat would eliminate over-wintering habitat for adult redband trout and would also eliminate rearing habitat for juvenile redband trout, resulting in a decrease in redband trout numbers within the lower portion of the AA. Displaced redband trout could experience increased mortality rates resulting from "competitive exclusion" battles with other resident trout for the limited pool habitat in the lower portion of the AA.

Cumulative Effects

The one element that is relevant in considering the cumulative effects of the No Action Alternative is the risk to the AA from stand-replacing fire(s). Due to the vagaries of nature, it is impossible to predict the short and long-term cumulative adverse effects from not treating the AA to reduce the risk of wildfire.

In the long term, taking no action to reduce biomass levels within the AA would adversely affect redband trout residing in the lower AA, as the risk of stand-replacing wildfires within the AA would increase with each passing year.

Alternative 2

Commercial Thinning

There are no direct effects from commercial thinning on fish habitat, as the RHCAs act as buffers to incidental potential sediment. No stream shade is affected. The harvest activities are partial removals, leaving stocked stands, and are all outside RHCAs.

There would be no adverse indirect effects to redband trout as a result of commercial removal of trees. The commercial thinning units lie outside of the respective RHCAs, making the potential for adverse indirect effects to adjacent

streams (and redband trout) resulting from activities related to the commercial removal of trees unlikely. The INFISH (1995) harvest deferral areas are more than sufficient to prevent sediment flows from reaching adjacent streams. In addition, project design and post- activity mitigation measures such as seeding and installing waterbars on disturbed soils would also limit the movement of logging-disturbed soils, preventing them from reaching adjacent streams.

Clayton's 1981 study of logging effects on granitic soils in the Idaho Batholith found that when ground cover disturbances exceeded 30 percent that surface erosion "increased markedly." This same study noted that skyline (cable) logging was found to leave about 64 percent of the logged area undisturbed, while about 24 percent was "slightly disturbed," in that ground litter was removed and mineral soils were exposed. Five percent was "deeply disturbed," where the surface soil was removed and sub-soil exposed, and another 3 percent was compacted. The disturbed soils were attributed to the felling and yarding of the trees by cable yarding systems. Accelerated erosion would be expected to be found on about 8 percent of the area that was cable logged.

Clayton's study also showed that broadcast burning of slash resulted in litter losses on about 14 percent of the total study area. Some accelerated erosion was observed post-burn. The combined soil disturbances attributed to skyline logging and broadcast burning was about 22 percent of the area, which is well below the 30 percent threshold level at which point surface erosion increased substantially.

Soil disturbance for ground-based equipment yarding was calculated using assumed rates of 15 percent bare soil for tractor yarding (USDA Forest Service, 1981). The combined soil disturbances attributed to ground-based yarding and broadcast burning would be about 29 percent of the area. It is expected that yarding-related soil disturbances within the project area would be similar to what was observed in the Clayton study.

There would be no loss of redband trout rearing and spawning habitat in adjacent streams as a result of removing commercial-sized trees from 598 acres within the Stices Gulch Interface Project Area, as no logging activities-related sediment would reach and enter streams within the project area. Because ground-based yarding would take place on ground with a slope gradient of less than 30 percent, the INFISH activities-deferral buffers would ensure that any overland sediment originating from these units would not reach any adjacent stream channel.

The commercial removal of trees from these harvest units would not diminish the existing stream shade levels on any adjacent perennial stream, as the minimum harvest deferral width on all of those units is 150 feet. The microclimate of the adjacent riparian areas would remain "as is," and there would be no increases in existing water temperature regimes as a result of undertaking these activities.

Commercial removal of trees from these units would not diminish the recruitment potential of large woody material (LWM) to any of the adjacent streams.

Pre- and Non-commercial Thinning

Some precommercial thinning and whip felling would occur within RHCAs. Slash would be piled by hand and burned later.

There is no soil disturbance resulting from the act of felling precommercial-sized trees and no vegetation disturbance beyond cutting down the target tree. Precommercial thinning is limited to areas that can be enhanced and restored while not adversely impacting riparian habitat. Trees that provide stream shade and future in-channel large woody material would be retained; that is, no trees within a tree height of the adjacent stream channel or spring would be cut. Trees would be felled away from areas supporting sensitive riparian vegetation. Existing riparian shade levels would be unchanged as a result of conducting precommercial thinning within the respective RHCAs.

In the long term, this activity could contribute to environmental conditions favorable to redband trout, as the remaining trees would grow taller, providing more shade and thermal refugia to adjacent streams, as well as more large woody material.

There would be no indirect effects to adjacent streams from conducting precommercial thinning activities. Individuals using chainsaws would do the precommercial thinning.

Temporary Road Construction

There would be no direct or indirect adverse effects to redband trout within the AA resulting from this temporary road construction activity on BLM-managed lands (approximately one-half mile). The temporary road would be located mid-slope or ridge-top. Implementation of road-related mitigation measures to minimize overland sediment flows from this temporary road would insure that there would be no adverse indirect effects to stream channels. There would be no adverse effects to redband trout, as they do not occupy that portion of the AA. Obliterating the road would reduce long-term sediment production.

Prescribed Burning

Within those areas proposed for commercial thinning, prescribed burning would take place outside the respective RHCAs. All units proposed for commercial thinning lie outside RHCAs, eliminating the potential for adverse direct and indirect effects to adjacent streams resulting from prescribed burning activities within these commercial thin units.

Clayton's study indicated some accelerated erosion was observed post-burn. It is expected that fire-related soil disturbances within the Stices Gulch commercial thin units would be similar to Clayton's study. This minor soil disturbance, along with INFISH buffers, would ensure that there are no direct or indirect adverse effects to streams.

Prescribed burning would also take place outside the commercial thin units through ignition of ground fuels to within 25 feet of adjacent stream channels. Direct effects of this burning include a short-term increased incidence of spotty patches of bare soil and a corresponding increased risk of sedimentation to adjacent streams. Field experience has shown that the risk of sedimentation input to adjacent streams following burning is very low due to the quick re-growth of native ground cover and the presence of vegetated riparian buffers.

There would be no adverse indirect effects to existing pool numbers and no loss of spawning and rearing habitat for redband trout, as there would be minimal sediment inputs to adjacent steams from conducting fuel reduction activities in the project area.

Prescribed burning may indirectly benefit soil and water resources by reducing the incidence of large wildfires that could result in severe soil/water damage throughout the project area.

Habitat Enhancement Projects

Ground disturbances would result from activities to dig the postholes prior to the placement of the fence poles. The scale of disturbance would be so small as to have no direct or indirect effect to redband trout occupying that portion of lower Trail Creek.

Enhancement of aspen stands improves the diversity of riparian areas in the long term. The treated areas would need to be protected over time to be effective. Groves of deciduous trees add mulch to the RHCAs through leaf loss in the winter, improving the stability of riparian soils, and thus reducing potential to impact fisheries.

Cumulative Effects

Under Alternative 2, about 20 percent of the acreage on public lands within the AA would have tree removal activities occurring on them. This fact, in combination with the project-related mitigation measures, would ensure that the tree-removal and associated prescribed burning activities would have little or no cumulative adverse effects to streams within the Stices Gulch AA, as well as in the Powder River-Salisbury Watershed. The INFISH activities deferral buffers would ensure that there are no direct or indirect adverse effects to adjacent streams within the Stices Gulch AA.

Determination

The redband trout occupying the lowermost portion of Stices Gulch would not be directly or indirectly affected by activities associated with the construction of the temporary road on BLM-managed lands.

The redband trout within the lower Stices Gulch AA would not be adversely affected in a direct or indirect manner from activities associated with the felling and hauling of commercial-sized trees or by the prescribed burning within the Stices Gulch Project Area, as INFISH activities-deferral buffers would capture any sediment originating from these disturbances.

Alternative 2 meets the Forest Plan (as amended), in that none of the proposed actions would reduce riparian habitat quality in the Stices Gulch Interface Project Area.

Alternative 3

Under Alternative 3, the same number of acres proposed for commercial thinning under Alternative 2 would receive fuels whip felling. All of the proposed treatment areas would be hand-treated. No machinery would be used to pile the biomass.

Direct effects from fuels whip felling, precommercial thinning, habitat enhancement projects, and prescribed burning would be the same as described for Alternative 2. Hand work within Riparian Habitat Conservation Areas (RHCAs) causes minimal impact, eliminating the potential for adverse direct effects to adjacent streams and redband trout. The scale of soil disturbances within the Stices Gulch Project Area would be less under Alternative 3, as there would be no removal of commercial-sized trees using skyline and ground-based yarding equipment, and no machine piling of slash.

Indirect adverse effects to adjacent streams and redband trout from the fuels whip felling, precommercial thinning, habitat enhancement projects, and prescribed burning would be the same for Alternative 2 as described under Alternative 2.

In the long term, the wildfire risk to streams and redband trout within the project area would be greater because Alternative 3 would reduce the existing fuel loading, and subsequent susceptibility to wildfire to a lesser extent than Alternative 2 would.

Cumulative Effects

Under Alternative 3, there would be no removal of commercial-sized trees or use of machinery other than chain saws. This fact, in combination with the project-related mitigation measures, would ensure that fuels whip felling, precommercial thinning, habitat enhancement projects, and prescribed burning activities associated with Alternative 3 would have little or no cumulative adverse effects to streams and redband trout within the project area as well as in the Powder River-Salisbury Watershed.

Prescribed burning activities may indirectly benefit soil and water resources by preventing large catastrophic wildfires that could result in severe soil damage throughout the Stices Gulch Project Area.

Determination

The redband trout occupying the lower portion of Stices Gulch would not be adversely affected in a direct or indirect manner from activities proposed under Alternative 3.

Alternative 3 meets the Forest Plan (as amended), in that none of the proposed actions would reduce riparian habitat quality in the Stices Gulch Project Area.

D. Forested Vegetation Condition

ISSUE 2: RESILIENT/HEALTHY ECOSYSTEMS

Effects Common to the Action Alternatives

Thinning would reduce the number of trees per acre to levels that would favor increased residual growth and improve tree vigor. Subsequent conditions would favor endemic levels of bark beetle populations.

With stocking level control the following effects to vegetation and stand structure/composition can be expected:

- Average tree diameter following thinning would increase. The development of large diameter old-growth ponderosa pine would be accelerated. The most vigorous dominant and co-dominant trees in the stand would be retained, with removal of intermediate-sized trees (seedling to 9-20 inches diameter in commercial units, up to 7-9 inches in pre- or non-commercial units). In most stands, approximately 30 to 50% of existing basal area would be retained. Residual basal area would range from approximately 40-90 square feet per acre. Residual canopy closure would range from 35-60 percent. Clumps of higher basal area would be maintained around snags and some trees greater than or equal to 21 inches in diameter. The intent of leaving these trees is to have some areas within units with higher stocking and stressed trees as a source of future snags as well as to provide diversity of stand structure.

- Growth of residual trees would be expected to increase considerably as the site's light, moisture, and nutrients are allocated to fewer trees.

- The occurrence of late seral species such as grand fir would be reduced to levels that would have occurred historically with the dominance of frequent, low intensity fires. Stand density (trees per acre) would also be reduced to a more sustainable and resilient level typical of conditions found in this area prior to 1900.

- Resistance to wildfire would increase over time as larger, thicker-barked trees occupy the sites.

- Development of some two-storied stands would take place within 10-15 years, particularly in stands where basal area is reduced to less than 50 square feet of basal area per acre. In order to meet pest management and fuels management objectives, it is likely that stocking control or prescribed fire (or both) would be periodically used on a site-specific basis to remove much of this developing understory.

- Stands would be expected to become more resistant to further beetle attack, until such time that accrued growth results in increased susceptibility due to overcrowding (in approximately 20 years).

  It should be noted that response of trees to thinning techniques is not immediate. It may take some years for trees to react to more light, nutrients, and other stimuli. After thinning there would be an immediate micro-climate change that would provide less suitable habitat for bark beetles.

- Ponderosa pine would be maintained as a major species component, with pine maintained in stands that otherwise might be affected by beetle-caused mortality. Thinner-barked, shade-tolerant species such as grand fir and, to some extent Douglas-fir, would be selectively reduced in numbers by periodic prescribed burning. The silvicultural objective of burning would be to restore fire to the ecosystem as a stocking regulator, and to reduce the potential for damaging wildfire if fuels were allowed to build up in the prolonged absence of fire. Overall levels of mistletoe in pine and Douglas-fir would be reduced.

- Fuel loading would be reduced, distances between residual tree crowns would be increased, and trees with crowns lower to the ground would be pruned by fire. All of these are components that influence fire behavior and that would reduce the potential severity of a wildfire, increase the ability to control fire, and decrease the amount of time needed for the system to recover from a disturbance.

- Grass, forb, and shrub production would increase as overstory tree canopy closure is reduced.

- Upland willow and mountain mahogany (and other hardwood) vigor would increase as overstory canopy closure is reduced. Vigor of aspen, as well as the number of young plants, would increase as competitive overstory trees are removed.

Effects Specific to the Alternatives

Alternative 1 (and all untreated areas within the action alternatives)

Ponderosa pine stands that have not yet been infested by insects would become increasingly susceptible and remain at high risk to infestation and death.

Most young stands within the AA are experiencing a decline in stem wood production. This decline is most noticeable in those stands where basal area exceeds 100 to 120 square feet per acre, and has become more pronounced in the past decade. This is partly due to increased stand density and increased moisture-related stress. It has been suggested that the decline in stem wood production is also an indicator that carbohydrate reserves are not adequate to protect trees from insect attack (*Waring and Pitman, 1980).* Radial growth in inches has been declining appreciably in stands that are now experiencing beetle attack. In most of these stands, diameter growth during the past 10 years is approximately one-third to one-half the rate of the previous 10 years.

If stocking is not reduced to levels that encourage improved tree vigor, growth, and increased vigor against further beetle damage, a variety of effects to the area's vegetation can be expected:

1. Potential losses in ponderosa pine stands and stands that have a major ponderosa pine component. Approximately 50 percent of the stands (or more) within the AA meet these criteria. These losses could be substantial, with large areas left in a non-stocked or understocked condition following an outbreak.

2. Increased risk of high-intensity wildfire through the buildup of dead fuels. In addition to killing surviving trees and other vegetation, intense wildfire can damage the site itself, and, during peak runoff events, contribute to severe scouring of stream channels.

3. Species composition in mixed species stands would accelerate towards dominance by fir and a reduction in the percentage of pine.

4. Species diversity would be reduced in those stands where ponderosa pine is eliminated or drastically reduced.

5. Options to develop and maintain a large "yellow pine" component in existing stands, characteristic of the pre-logging, pre-fire suppression era, would be set back several decades if stocking level control does not occur and/or existing pine growing stock succumbs to beetle attack.

6. There would be an increase in the number of snags.

7. There would be a continuation of multi-layered stands susceptible to fire, and insects such as the tussock moth and spruce budworm.

System resiliency would be reduced. Because of the potential for a hotter fire, the time needed for a system to recover would increase. The time needed to achieve the desired condition of larger diameter, more fire-resistant pine would take longer than under the two action alternatives.

Mountain mahogany and aspen would continue to decline and lose vigor due to competition with conifers. Less willow and bitterbrush would occupy the sites, as canopy closure remains high.

If large-scale fires are a result then, long term, there would be reduction in hiding cover until stands could regenerate and provide hiding cover again. It would take thermal cover much longer to recover from these effects than it would hiding cover.

Actions Common to the Action Alternatives

Fuels Whip Fell (FWF)

Some younger stands would have a fuels whip fell/precommercial thin (FWF) with no commercial harvest. The cut tree diameter in the FWF units would generally be less than 7-9 inches dbh. Many of these areas have limited potential for removal of material because of lack of road access for the necessary machinery. These are mixed size (sapling to 80 year-old trees), mixed species, as well as ponderosa pine stands with very low growth increments, but these stands still having adequate crowns to take advantage of increased light and nutrients and would increase growth after thinning. Spacing between leave trees would be 14-25 feet, depending on the productivity and carrying capacity of the individual sites and the average stand diameter of the area proposed for treatment. Smaller diameter stands would have closer residual tree spacing than larger diameter stands. Residual canopy closure would be in the range of 45-60 percent. Residual basal area would be in the range of 60-90 square feet.

Thinning slash would be evaluated post-treatment for slash treatment options. The slash could be left in place for several years until the snow can reduce the height of slash and the site could be underburned. Some sites with less than 30 percent slope would have the potential to be machine-piled (grapple) and the piles burned later. Some would be hand-piled and the piles burned later.

Stand structure would change from understory re-initiation to stem exclusion, closed canopy (canopy closure greater than 40 percent). This change would occur on approximately 1,190 acres under Alternative 2, and on approximately 1,788 acres under Alternative 3. The reduction in stocking levels and modification of species composition would be less with FWF than with prescriptions such as a commercial thin that allow for removal of larger fuels. When using only hand labor, the size of material cut is usually limited to less than 7-9 inches dbh because of the cost and physical limitations in moving the larger material. Some removal of firewood or post and pole type material may occur in these units if access can be accomplished with pickup-size vehicles.

Precommercial Thinning (SPC)

Precommercial thinning would be prescribed for areas that have been planted with seedlings in openings created by past fires or logging that removed the majority of the overstory. Most of the stands proposed for thinning are less than 15 years old

and have an average dbh of less than 2 inches. Spacing between leave trees would be 12-16 feet. Slash from thinning would be hand piled or left in place, depending on how many stems per acre were cut. Thinning would be by hand (chain saw). Stand structure would change to stem exclusion, open canopy.

Aspen Thinning

If unchecked, conifer competition would continue to severely reduce the health and resiliency of the aspen. In addition to competition from conifers, ungulate grazing of young aspen is preventing them from growing into larger diameter trees. Competing conifers up to 18 inches dbh would be cut and left in place (jack-strawed) to protect young clones from grazing, or the cut conifers may be piled and then burned. A limited number of overstory aspen may be cut down or girdled to encourage the establishment of new suckers. Individual aspen trees throughout the AA would also be released where there is an opportunity. Approximately one acre (total) of the AA would be treated in this manner. Both action alternatives include the cutting of the conifers, which would release the existing smaller aspen trees; cutting overstory aspen and/or pile burning modifies the hormonal balance of the aspen clone and encourages new suckers.

Fencing to protect the newly established aspen suckers is a critical part of this enhancement project. If fencing is not possible, then the enhancement portion of the project that includes cutting overstory aspen or burning should not proceed. Fencing should be constructed in a manner to keep out all ungulates (e.g., New Zealand fence) and remain in place for 10-15 years.

Thinning conifers from aspen, Scouler's willow, and mountain mahogany would reduce cover in the short term, but should provide a valuable food source in the long term. Should the conifers not be thinned from these species, these specific habitats would be at risk from conifer competition. The loss or degradation of these habitats would have negative effects on big game. Slash pull back from existing snags and down logs would have little effect on big game.

Effects Specific to the Action Alternatives

Alternative 2

Commercial thinning (HTH)

Commercial thinning (HTH) would be used on ponderosa and Douglas-fir sites where the stocking level and structures exceed the desired objective and access can be achieved using existing road systems. These stands are generally 80-100 years old and average 10-16 inches in diameter. Growth of many of these trees has slowed due to increasing stand density, and in the past few years, the effects of drought. Density has also increased to the point that stands are beginning to be attacked by bark beetles (mountain pine beetle, *Ips*). Some of these stands have variable levels of mistletoe infestations that have the potential to decrease growth of residual trees.

The objective of the HTH prescription is to reduce the overall stand density to make the stand more resistant to wildfire and bark beetle attacks. Thinning would be from below, which means that most of the largest diameter trees would be left on-site and the smallest trees would be removed first. Live trees less than 21 inches dbh could be removed, but the average cut tree would be in the range of 10-12 inches dbh. Growth would thus be concentrated on the largest trees, moving them into a larger diameter condition and more beetle-resistant situation faster than if thinning occurred naturally. The development of old-growth type stands would be accelerated. Underburning may lead to the establishment of a seedling layer that would need to be thinned or underburned to kill these seedlings in 10-15 years.

Post-treatment stands would have tree diameters averaging 10-16 inches, spacing between individual trees of 20-30 feet, 60-130 trees per acre, and 30-45% canopy closure. Residual basal area would be 40-60 square feet. The smaller the residual stand diameter, the higher the number of trees per acre that would be left uncut. Stocking levels would be lowered to well within the recommended range and be low enough to avoid the need for additional fuels reduction in the next 20 years.

Species composition would be shifted towards a dominance by ponderosa pine and larch, a condition that would more closely represent one that occurred historically.

Stand structure would change from understory re-initiation to stem exclusion/open canopy (tree canopy closure less than 40 percent).

Comparison Of Alternatives

The tables on the next page summarize treatments and effects between the action alternatives.

Table 8
Alternative Treatments

Primary Treatment	Alt 2 acres	Alt 3 acres
Fuels Whip Felling	1,190	1,788
Precommercial Thinning	352	352
Hand Piling	28	72
Aspen Thinning/Mahogany enhanc.	18	18
Underburning (timber)	316	316
Burning (grass/sagebrush)	408	408
Grapple Piling	44	0
Commercial thin	598	0
TOTAL ALL TREATMENT	2,954	2,954

Table 9
Effects Summary

Element	Degree of Change Alt 2	Degree of Change Alt 3
Stocking level reduction	Highest	Moderate
(acres within rec. level)	950	352
Species composition	Highest	Moderate
Stand structure	Highest	Moderate
(acres stem ex./open created)	950	352

Implementing Alternative 1 would result in the least amount of positive effect from a fuels reduction and insect/disease management perspective. Stands would continue development towards dominance by multi-layer, small diameter stands with a species composition shifting towards grand and Douglas-fir. In the short run (10-20 years), stand attributes such as hiding cover, thermal cover, and smaller diameter trees (less than 21 inches dbh) would increase. In a longer time frame (20-50 years) these vegetation conditions are not sustainable across the landscape and would lead to an increase in hotter and larger scale wildfires, as well as more extensive and severe insect outbreaks from bark beetles, spruce budworm, and tussock moth. The large tree ponderosa pine character, large diameter snags, aspen, and mountain mahogany components would continue to decline in this system. If large-scale fires are a result then, long term, there would be reduction in hiding cover until stands could regenerate and provide hiding cover again. The loss of thermal cover, which is related to canopy closure, would take much longer to recover from than hiding cover, which is related to presence of smaller diameter trees.

Implementation of Alternative 2 would result in the largest degree of effect in moving the current condition towards the desired future condition for vegetation. Under Alternative 2, 950 acres would change from an understory re-initiation condition into a stem exclusion/open canopy single-tree layer classification. This would also result in a fire Condition Class 1 type of stand and be more resistant to stand-replacing wildfire than the current landscape condition. In addition, implementing Alternative 2 would move 950 acres to a condition within the recommended level for stand density.

Implementation of Alternative 3 would move 352 acres into the stem exclusion/closed canopy condition, but actions would generally be less effective than actions under Alternative 2 in reducing the stocking level to a level fully within the recommended level because of the limitations in handling material greater than 9 inches dbh when using non-mechanized means. Implementing Alternative 3 would move 352 acres into the recommended level for stand density.

E. Fire and Fuels Management

ISSUE 1: AIR QUALITY/SMOKE

The use of prescribed fire in this area would create a short-term smoke impact. This would be transient and should not last for more than 24 hours per occurrence. Piling fuels and burning under moist or snow-covered conditions would extend the conditions available to burn, reducing smoke creation and impacts to a large degree. Burns would be planned so that factors such as wind direction would help to limit the effects of the smoke (e.g. smell, eye irritation) on local residents and the general public. Wind conditions that would push smoke directly down Stices Gulch would be avoided as much as possible. In the evenings, the residual smoke would tend to follow the local wind patterns, and flow down slope. Smoke would tend to settle in the bottom of the drainages during late evening and early morning, and flow down toward the north before dispersing about mid-morning.

Burning piled fuels reduces smoke production in two ways. By limiting burning to the piled fuels, the fuels contributing to high fire hazard can be removed, but the overall quantity of fuels burned on any acre is greatly reduced by not consuming the grass, litter, brush, and live fuels between the piles as a general underburn would. Secondly, piled fuels burn more efficiently and produce less particulate matter per ton than the same fuels would if left scattered across the units.

Experience from several prescribed burns in this area has shown that effects of this smoke should be of short duration. Local residents would be notified, and appropriate safety signs and other methods would be used to warn motorists.

Wildfires usually produce much greater quantities of particulate matter per acre burned, and the effects of smoke usually extend over a minimum of several days. Wildfires typically burn under fuel moisture conditions that allow much greater

consumption of fuels and higher intensities as compared to prescribed burns, resulting in much higher smoke production.

Smoke production from prescribed underburns is directly related to the amount of fuels consumed. The units proposed under Alternative 2 that have commercial removal would produce less smoke when they are burned. This result would vary due to the moisture content of the large fuels when the burning occurs, and whether the fuels are piled or burned in place (underburn). Piled fuels would produce less smoke than the same fuels underburned, due to more efficient combustion and higher burn temperatures in the piles. However, these better burning conditions within the piles would result in a higher rate of consumption of the larger logs.

Other factors and tradeoffs are also involved, including the fact that small changes in smoke outputs are not detectable. It can be estimated that biomass removal would result in a decrease of 50 to 100% in the available fuels (natural or activity-generated) on these units. This would result in a noticeable decrease in smoke production whether the remaining fuels in the units are underburned or piled. Current research is ongoing to attempt to more closely define and predict fuel consumption and smoke production. Some of that research is being conducted on Baker and Unity districts, but it will be several years before useable results are available.

ISSUE 2: RISK OF HIGH FIRE SEVERITY / INTENSITY

Following implementation of an action alternative, stands within the AA would contain fewer small trees and less ground fuel. Open space between canopies of the co-dominant trees would limit the intensity of wildfires. At low intensities, wildfires would kill few large, fire-tolerant trees, but would kill small encroaching trees and other vegetation, and consume dead fuels. Low-intensity fires would recycle nutrients, and would retain the soil's organic layer. This remaining organic material stabilizes the soil surface and helps prevent erosion. Low-intensity fires would pose lower risk to forested stands, firefighter and public safety, and private properties. This is defined as Condition Class 1. Low intensity burns are defined/described on page 84.

Timber or fuels management activities that add dry fuel accumulations to stands with remnant activity-generated slash increase the risk that trees cannot be managed to maturity. Thinning slash left in place adds to the existing fuel loading, and therefore to the intensity of any subsequent fire, whether prescribed burning or wildfire. Thinning also opens the stands, leading to reduced fuel moistures, higher fuel temperatures, and higher effective wind speeds. These factors lead to higher burn intensities and rates of spread. Treatment of these fuel accumulations is necessary to reduce the hazard. Previous project analyses in this area (Lower Montane, Sandshed, Rancheria) contained provisions for treatment of activity slash. Funding is available to continue those treatments, particularly adjacent to the private land boundary in the Rancheria Creek area.

Fuel loading would be reduced, distances between residual tree crowns would be increased, and trees with crowns lower to the ground would be pruned by fire. All of these are components influencing fire behavior that would reduce the potential severity of a wildfire, increase the ability to control fire, and decrease the amount of time needed for the system to recover from a disturbance.

As the stands move toward climax conditions, more ground and ladder fuels are generated, increasing the probability of high-intensity fires. This trend is especially true within the RHCAs. In many cases, fuel conditions within the RHCAs are currently too high to allow fire to be re-introduced without prior fuel treatments.

ISSUE 3: RISK OF LOSS OF LIFE AND/OR PROPERTY

Alternative 1

Initial attack response to new fire starts will continue to be aggressive; however the continuous nature of the fuels would limit options for suppression of fires that escape initial attack. Fire exclusion would continue the transformation from seral, fire-adapted species, to stands comprised of an increasing percentage of shade-tolerant, fire susceptible species. Stand structure would continue toward the development of stands with dense understories. Fuels would continue to accumulate to levels that exceed historic conditions (*Johnson et al*., 1993; *Parsons and DeBenedetti*, 1979).

These vegetation changes reflect landscape conditions outside the historic range of variation under natural fire regimes. Fires that escape initial attack would be larger, more destructive to resources and more expensive to suppress. Exclusion of low-intensity fires virtually assures eventual occurrence of large high-intensity fires that kill most trees (*S. Arno*, 1996). Private land, structures and heritage sites would be more difficult to defend due to the increased fuel loadings. Public and firefighter safety would be more difficult to maintain when fires revisit the area.

Alternative 2

Initial attack response to new fire starts would continue to be aggressive, as under Alternative 1. Reduced fuel levels would reduce the intensity of fire starts, and reduce the chances that a fire would escape initial attack. There would be more contain/control options for escaped fires.

Implementing this alternative would shift the majority of stands within this AA toward Condition Class 1, as implementation of either alternative would treat 60 percent of the area under analysis. In addition, approximately 15 percent of the analysis area is already under vegetation management (precommercial thinning). Seral, fire-adapted species would increase in stand composition, with a corresponding decrease in shade-tolerant, fire susceptible species. Stand structure would be shifted toward the historical condition of open park-like stands with

reduced fuels and sparse understories. (*Johnson et al.,* 1993: *Parsons and DeBenedetti*, 1979).

These vegetation changes reflect landscape conditions shifted toward the historic range of variation under natural fire regimes. Fires that escape initial attack would be less frequent, less destructive to resources, and less expensive to suppress. Periodic low-intensity fires and prescribed burning would lower the probability of occurrence of large high intensity fires that kill most trees (*S. Arno*, *1996*). Private land, structures and heritage sites would be easier to defend due to the decreased fuel loadings. Public and firefighter safety would be easier to maintain over time when a series of prescribed fires revisit the area.

Maps on pages 10 and 37 show in graphic form the current and desired Condition Class (see Glossary). The three levels of Condition Class each contain broad ranges of stand condition, and were designed for landscape scale comparisons, and are much less useful for evaluating individual unit treatment levels. Only one post-treatment map is shown, and represents predicted results of both action alternatives. It is important to note that implementing Alternative 2 would achieve a higher level of fuels treatment and be less costly to implement over a shorter timeframe. This is a major difference that is not apparent by the predicted Condition Class because the categories are broad.

These vegetation changes reflect landscape conditions shifted toward the historic range of variation under natural fire regimes. Fires that escape initial attack would be less frequent, less destructive to resources, and less expensive to suppress. Periodic low-intensity fires and prescribed burning assures a low probability of occurrence of large high intensity fires that kill most trees (*S. Arno*, *1996*). Private land, structures and heritage sites would be easier to defend due to the decreased fuel loadings. Public and firefighter safety would be easier to maintain when fires revisit the area, either prescribed burns of wildfires.

Alternative 3

Initial attack response to new fire starts would continue to be aggressive, as under Alternative 1. Implementing this alternative would reduce the fuel levels to a lesser degree than under Alternative 2, primarily because only smaller diameter trees and fuels would be managed.

This alternative would shift many stands within this AA toward Condition Class 1. Seral, fire-adapted species would increase in stand composition, with a corresponding decrease in shade-tolerant, fire susceptible species. Stand structure would be shifted toward the historical condition of open park-like stands with reduced fuels and sparse understories. (*Johnson et al.,* 1993: *Parsons and DeBenedetti*, 1979). The overall change would be similar to Alternative 2, but to a lesser degree, at higher expense, and would take longer to complete. Other vegetation management treatments may be necessary in years to come in order to arrive at the desired level as planned for this analysis area.

It is important to note that actions under Alternative 3 would achieve a lower level of fuels treatment and be more costly to implement over a longer time frame. This is a major difference that is not apparent by the predicted Condition Class.

Fire and Fuels Management, continued

Effects Specific to the Alternatives

Alternative 1

Alternative 1 proposes no new management activities within the AA. The fuels and fire management components are analyzed according to current conditions and trends occurring within the ecosystem.

The No Action Alternative would allow the stand structure, fuel loadings, and continuity of fuels to continue to move toward Condition Class 3, with a corresponding increased risk to the residents, to firefighter safety, private property, and to the forested setting of the community. Increasing stand density would lead to an increased potential for disease and insect mortality, and a corresponding increase in the number of dead trees. Increasing ladder fuels and fuel accumulations on the ground would contribute to the potential for a major fire and its potential damage to all resources on public and private land. Continuous and increasing fuels levels throughout the AA would contribute to spread and intensity of wildfires.

Fuels reduction work on private property directed toward protecting private lands and structures is in initial planning stages, and will continue independently of this analysis. Some landowners have independently begun to manage the fuels around their property.

Timber stands would continue changing toward climax conditions, and tree species would continue to encroach into meadows and other openings. New thinning fuels would continue to accumulate (projects initiated under separate analyses), on a reduced scale, and would be treated over time or allowed to decompose naturally**.** There would be no change in the air quality, except for burning on private property and potentially high emissions occurring from unplanned wildfires.

Fuel Loadings

Fire exclusion and the resultant loss of dominant seral species leads to changes in the structural patterns within the forest. Ground and areal fuel loadings would continue to increase with time. Continuity of these fuels would also increase, providing higher fire line intensities and more resistance to control. Surface fires would have higher intensities for longer durations, providing for greater mortality within the understory and overstory vegetation. The probability of wildfire

transitioning from surface fuels to tree crowns would continue to increase. Higher intensities for longer durations would provide for greater heat flux into the litter, duff, and soil profiles. This would have detrimental effects on soil, such as increased erosion and creation of hydrophobic conditions (water runs off the soil instead of soaking in). Layering within the canopy would continue to increase, providing an environment suitable for insect and disease outbreaks. This situation in turn provides more available fuel within the surface and overstory layers.

Alternative 2

Under this alternative, actions would create a positive change in the desired fuel profile. Management activities may increase the existing fuel loadings within the treated stands above desired levels in the short term. Unit-specific treatments are shown in the tables, pages 57-59. Existing fuel loadings are 2-15 tons per acre. It is estimated that management activities would add an additional 5 to 10 tons per acre for a total fuel loading of 7-25 tons per acre. Commercial harvest may generate large slash loads, depending on the logging system that is used. With whole-tree yarding by mechanical harvest systems, the slash would be accumulated in large landing piles, with very little left in the units. On Units 4, 5, 7, 8 9, 10, 15 and 18, cable yarding systems would be utilized because of the steeper slopes. Whole-tree yarding will not be required on these units, although grapple piling and whole-tree yarding could be accomplished on the slopes under 30% that are accessible by existing roads. Treatment of the activity slash within these units would be required before burning, to assure a light-intensity burn. Options include piling, lopping, slash pullback from the remaining trees or other treatments. No units with commercial treatments would be burned prior to completion of logging activities.

Fuels Piling (Hand and Machine)

In all cases where fuels are to be piled, either by hand or machine, both activity-generated slash and natural fuels would be treated.

Piling slash with a low-ground-pressure grapple machine is a cost-effective alternative for treating this slash. Acceptable equipment for this task would be limited to a tracked vehicle with less than or equal to 5 pounds per inch ground pressure. The grapple arm should to be able to reach at least 25 feet from the centerline of the machine, and have the ability to rotate a full 360 degrees. Even greater efficiency can be achieved if the stands are thinned and piled in one operation with a single pass of the machine. Operations would be limited to units or portions of units with slopes less than 30%. This would minimize soil compaction and displacement. Monitoring of units completed over the last several years has shown that some displacement of duff, litter, and upper soils layers would occur due to operations of the tracks during turning and from the operation of the grapple head while picking up and moving logs and other fuels to the pile locations. Limiting operations to existing skid trails and to slopes less than 30% would minimize this displacement. Units proposed for this treatment are shown in the tables on pages 57-59.

Some units in this AA are too steep (over 30% slopes) for mechanical equipment to operate. In these units, hand treatments would be used. These treatments, such as lopping and hand piling of the slash, are expensive, but are appropriate in critical areas, and around private property.

The resulting piles can be burned in the fall following sufficient rainfall or over winter with snow cover to reduce or eliminate the risk of escape and minimize damage to the remaining stand. Hand piles should be covered to maintain a dry core within the pile so that they can be burned during wet or snow-covered conditions. Burning piled fuels also allows the greatest flexibility to select burning conditions that would minimize smoke production and impacts. Burning in late fall or winter is also cost effective.

Slashbusting

An alternative treatment that can be used to reduce slash loading is the use of a 'Slashbuster' or similar machinery to grind and chip existing fuels. This operation reduces fuel bed height and continuity, and also reduces ladder fuels. This machine can also be used to do stand thinning in smaller sized materials. The grinding head on the slashbuster would be required to handle fuels up to 8 inches in diameter and reduce overall fuel bed depth to 12 inches or less. The machines used in both this and grapple piling operations are small tracked 'backhoe' style machines that have less than or equal to 5 pounds per inch ground pressure. The Slashbuster head should have a 16-foot reach from the centerline of the machine, and also be able to rotate 360 degrees. Soil impacts are further reduced because the tracks operate on top of the existing slash, stumps, etc. This operation does not remove any fuels, so an underburn following treatment may be required. The risk and complexity of the burn is greatly reduced, however, due to the greatly reduced slash depth and reduction in ladder fuels.

Precommercial thinning/fuels whip felling also reduces stocking levels and reduces the probability of a crown fire due to a reduction in crown bulk density. These open stands allow the fuels to become drier, and result in higher effective wind speeds within the stands. These two factors combine to cause fires to spread more rapidly, and burn with higher intensities if the fuels are not treated. Higher burn intensities would result in higher tree mortality. Piling the fuels by hand or with machinery greatly reduces the risk and allows more options for burning. Ponderosa pine slash should not be left on site any longer than necessary, in order to prevent it from being used as a refuge or food source for pine bark beetles (*Ips*).

The greatest fire hazard is considered to be in the 15-tons-per-acre range of 0-3 inch class fuels. The breakdown for the harvest units would range from 6-14 tons per acre in the 0-3 inch class and 6-14 tons per acre in the 3+ range. While the 3"+ material would help meet the criteria for down woody material, the 6-14 tons per acre in the 0-3 inch class would, in some instances, be creating a fuel profile above desired levels.

Whole-Tree Yarding

Whole-tree yarding can greatly reduce the slash load and continuity from these types of thinnings, and is suitable for use on units with ground-based logging prescribed. This would result in 10 - 25 t/ac total biomass removal. In addition, ladder fuels would be significantly reduced within the commercial thinning units. This would reduce the costs of slash treatment, but not eliminate the need to treat the slash on the units.

The large landing piles resulting from whole-tree yarding would generate enough heat when burned to scorch nearby trees, and may scorch the soils directly under the pile. Units prescribed for cable system harvest would not be required to remove whole trees. This would result in a 5 to 10 t/ac biomass removal, with the remaining 6 to 14 t/ac of fuels left within the units. Alternate methods of treating this fuel would be used, including pullback, lopping and scattering, and hand piling. Grapple piling would be used on portions of units that are less than 30% slope.

In addition, periodic light underburns throughout the AA would move this area closer to its desired condition.

The fire behavior fuel models that best describe the predicted fuel profile following precommercial thinning are Fuel Models 11 and 12. The fire behavior characteristics best depicting these fuel models are:

> Fire Behavior Fuel Model 11 - Fires are fairly active in the slash and herbaceous material intermixed with the slash. The spacing of the rather light fuel load, shading from overstory, or the aging of the fine fuels can contribute to limiting the fire potential. Light partial cuts or thinning operations in mixed conifer stands are typical. The less-than-3-inch material load is less than 12 tons per acre. The greater-than-3-inch material is represented by not more than 10 pieces, 4 inches in diameter, along a 50-foot transect.
>
> Fire behavior Fuel Model 12 - Rapidly spreading fires with high intensities capable of generating firebrands can occur. When fire starts, it is generally sustained until a fuel break or change in fuels is encountered. The visual impression is dominated by slash, much of it less than 3 inches in diameter. These fuels total less than 35 tons per acre and are well distributed. Heavily thinned conifer stands, including precommercial thinning, and medium or heavy partial cuts are represented. The greater-than-3-inch material is represented by encountering 11 pieces, 6 inches in diameter, along a 50-foot transect.

Fuel treatments in non-harvest activity areas would be used to promote ecological/vegetative plant regimes that have been disrupted through fire exclusion policies. The following fuels treatments would occur to accomplish a more desired fuel profile within the treated units: lopping, hand-piling and pile burning,

mechanical treatments on slopes less than 30% slope, and prescribed underburning.

Some areas are not proposed for treatments under this alternative because:

The stand is designated old growth habitat.

The unit has been previously treated with no further treatments required, or treatment of the unit would be difficult and expensive with less effective results.

The stand was left as is for wildlife habitat.

Units left untreated and that have heavy fuel loadings would be surrounded by areas where fuels would be treated to isolate these pockets of heavy fuels and reduce the risk.

The proposed units would be subjected to fuel treatments, including large- and small-scale underburns for wildlife habitat enhancement, natural fuels reduction, and ecosystem maintenance burns. Site-specific burn plans would be developed to address the objectives and opportunities for each treatment area. The majority of the area should be treated every 15 to 20 years to mimic the past occurrence of natural fire on the forest landscape.

Alternative 3

Under this alternative, the same units and acres are treated, however the treatments would be less effective in some cases, making this alternative less attractive from a fuels management standpoint. Unit-specific treatments are shown in the tables, pages 65-66. The major difference between action alternatives is the lack of commercial/mechanical tree removal under Alternative 3.

Although hand thinning and treatment of those fuels would provide some benefit, it would not be as effective as the treatments prescribed under Alternative 2. Total biomass removed from the units under this alternative would be in the range of 30 percent to 50 percent as compared to the same units under Alternative 3 with mechanical removal. This also reduces the ability to return fire to these units, and increases the risk and complexity of the burns. In some units, two entries would be required to thin/pile/burn the units before an acceptable fuels loading would be reached. Commercial tree removal/utilization would greatly improve that situation. Tree boles over 5 inches in diameter would not be required to be piled for burning, but would need to be lopped and bucked to lie flat on the ground. These larger fuels would not contribute to the rate of spread of a wildfire, but would increase a fire's intensity if the fuels burn after curing.

Without prior treatments of the fuels in these units, prescribed fires would be more difficult and complex to implement. Those units prescribed for tractor yarding or grapple piling under Alternative 2 are prescribed for hand thinning and fuels

treatments under this alternative. Implementation of this alternative would result in a minimally acceptable fuels treatment.

Effects Common to the Action Alternatives

The action alternatives do not attempt to treat all acres, to eliminate all risks, or to return forested stands to their pre-European conditions. The goal is to reduce their susceptibility to damage. Wildfires would continue to occur and burn throughout the AA. Stands with few small trees, little ground fuel, and open space between canopies of the co-dominant trees would limit the intensity of these wildfires. At low intensities, wildfires would kill few large, fire-tolerant trees, but would kill small encroaching trees, other vegetation, and consume finer dead fuels. Low-intensity fires would cycle nutrients, and would retain the soil's organic layer. This remaining organic material stabilizes the soil surface and helps prevent erosion. Low-intensity fires would pose lower risk to forested stands, firefighter and public safety, and private properties. This is defined as Condition Class 1.

Because ponderosa pine is the most common tree species in the majority of these stands, treatment strategies must be planned to avoid large increases in *Ips* beetle populations. Fall and winter treatments to remove mountain pine beetle and western pine beetle populations would provide an attractive food source for *Ips*. Burning green slash, lopping limbs from tops and boles, leaving the slash in the woods to dry, chopping with a slashbuster or similar treatments, or utilization of woody materials down to 2 inches diameter would all help to reduce the likelihood that slash created by management activities would become a food source for the *Ips* beetle. Several stands within this AA have been thinned and underburned or otherwise treated in the last 10 years. In most cases, these stands need no further treatment, but would require maintenance treatments in future years (regular burning).

<u>Fuels Whip Felling (Precommercial Thinning)</u>

Fuels whip fell (thinning) units would create large amounts of slash within the remaining stands. In some cases, underburning this slash would result in unacceptable damage to the small sapling and pole-sized leave trees. Only those stands that have trees large enough to withstand an underburn with minimal damage would be underburned. Utilization of this slash, chipping/slashbusting, or hand or machine piling followed by pile burning in cool conditions are acceptable options to underburning.

Thinning reduces stocking levels and reduces the probability of a crown fire due to a reduction in crown bulk density. These open stands allow the created fuels to become drier, and result in higher effective wind speeds within the stands. These two factors combine to cause fires to spread more rapidly, and burn with higher intensities if the fuels created by the thinning operation are not treated. Higher burn intensities would result in higher tree mortality. If slash treatment by underburning is delayed due to weather or other factors, other methods should be utilized to reduce the risk. Early spring or late fall underburns during times of low

temperatures and high fuel moistures may provide an opportunity to burn cured red thinning slash without endangering the leave trees. Pine slash should not be left on site any longer than necessary, to prevent it from being used as a refuge or food source for pine bark beetles (*Ips*).

Prescribed Burning

Light burn intensities are desirable to protect the soil resource, large down wood, minimize overstory tree mortality, stimulate grass and forb re-sprouting and maintain a mosaic burn pattern. The best conditions for this type of burn are in the spring when moisture contents are high in soil, duff, and large fuels, or in the fall after enough moisture has been received to meet the prescriptions. Light burns would decrease the litter layer but should not remove large portions of the duff layer. Root crowns and surface roots on most plant species present would be uninjured or re-sprout. Potential surface erosion should not change. A typical burn would result in a mosaic pattern of light burn and unburned patches throughout the unit, including the grass and sage stands and inclusions. Pockets of heavy fuels in timbered stands may result in small areas of moderate burn intensity and tree mortality. Ignition techniques can be used to minimize this.

Units or portions of units that are dominated by heavy fuels and long fire return interval ecotypes should generally not be burned unless the fuels are pre-treated to allow the burn to be of low intensity. Avoiding these pockets would leave areas of hiding and thermal cover intact, and reduce the potential for moderate burn intensities. By treating the fuels surrounding these stands, the size and intensity of wildfire would be limited by creating a mosaic fuel pattern throughout the AA.

Erosion potential increases when vegetation is removed. Vegetative cover would be reduced in the short term (1-3 growing seasons), but would increase over the pre-burn level in the long term. Prescribed burns completed in the spring typically re-sprout by mid-summer, and some would re-sprout within several days of unit completion. Some nutrients would be lost as a result of even light burns. The amount lost would depend on burn temperatures and the duration of the burn, and should be negligible from prescribed burns. After the burn, there would be a short-term increase (flush) in the amount of available nutrients. Wildfires would remove a much larger amount of vegetation and nutrients, and there is typically a much longer time period before any significant regrowth.

Site-specific burn plans would be developed at the time of the proposed treatment, based on this project level analysis that would begin a process to treat the majority of the AA over the next 5 to 10 years. There is potential for natural and activity fuels reduction, and ecosystem maintenance burning throughout the analysis area. The intent is to increase public and firefighter safety, return fire to its natural role in the ecosystem, reduce the fire hazard along private property, where feasible, and reduce or isolate the areas of heavy fuel loadings and long fire-return interval stands.

Hand piling and pile burning are also shared actions between the two action alternatives and are addressed throughout the alternative discussions.

F. Wildlife Habitat

Effects Common to All Alternatives

Threatened and Endangered Species (T&E)

The Endangered Species Act (ESA) of 1973 requires that Federal agencies protect and conserve threatened and endangered species or their habitats. The AA is not considered bald eagle or Canada lynx habitat. The AA is outside core lynx habitat. On-going management activities or those proposed as part of the Stices Gulch project would have no effect on either species.

Extremely limited habitat for the gray wolf exists within the AA. None of the alternatives would appreciably alter the abundance of prey for the wolf. The most important factor that would influence whether or not wolves would utilize the AA is human interaction and roads. The AA is in close proximity to the Stices Gulch residences and the human interactions associated with it. The AA is already fairly open and well roaded. There are no wolves known to be in the vicinity of the proposed project area. None of the alternatives would have a measurable effect on wolves or wolf habitat. Most of the AA already receives regular human activity, which makes it undesirable as a permanent location for wolves. Although wolves could travel through the AA, it is unlikely wolves would settle within this area due to the high road density and human activity in the vicinity.

Landscape-Altering Events

Landscape events such as a wildfire or epidemic insect outbreak could change habitat suddenly and substantially. These events are unpredictable in terms of timing and magnitude. The effects on wildlife populations and habitat are extremely variable. The effects from a wildfire are dependent on the amount of area burned and the burn intensity. Generally there are immediate effects to most wildlife species from a wildfire. The more mobile species such as birds, larger mammals, and flying insects disperse to adjacent unburned areas. The fire may kill less mobile species.

Species such as the red-tailed hawk are attracted to burn areas because of the increased vulnerability of prey species exposed due to lack of cover. Other species such as the hairy, downy, and northern three-toed woodpeckers increase in abundance after a wildfire because of the availability of a new food source (insects in dead trees). As plant associations move through different seral stages after a wildfire or epidemic insect outbreak, the wildlife populations change. An additional potential effect on wildlife is post-fire or post-epidemic insect outbreak management. The degree of magnitude and intensity of the effect is determined by the extent to which the area is roaded and salvaged logged. Oftentimes this can

have a more profound effect on the wildlife than the fire or insect outbreak itself by introducing changes that persist even when the landscape has recovered (e.g., roads, reduced snags). The biggest threat in relation to a wildfire or insect outbreak is that fires are unpredictable and can result in high-intensity impacts.

Habitat under all alternatives would contribute to meeting ODFW's management objectives for big game with varying effects and degrees of success.

Roads

The total road density for roads in the AA is 5.4 miles per square mile (m/m^2). Although the closed road density is 2.6 m/m^2, these roads are open to motorized vehicles up to 42 inches wide. From a wildlife habitat standpoint, these roads have basically the same effect as if they were open, although they are not used as often. ATV and motorcycle use on closed roads reduces wildlife security. Wildlife respond with physiological responses (e.g., increased heart rate) when vehicles are in the area.

This analysis does not address roads or opportunities to change the current road system in the AA. However, roads in general are addressed in the wildlife discussion because of their sizeable impact on wildlife species. Roads reduce secure habitat by dissecting the land and interrupting animal migration corridors. Forest fragmentation, which transforms large tracts of habitat into smaller pieces, works against species such as pine marten, fisher, owls, goshawks, and songbirds that depend upon the forest interior for food and shelter. Roads cause direct habitat loss by creating a long, narrow, unnatural disturbance and allowing humans increased access into otherwise remote, protected, and secure habitat. Use of roads leads to increased mortality either directly (road kills) or indirectly (hunting, trapping, poaching). Carnivorous mammals such as marten are vulnerable to over-trapping, and over-trapping can be facilitated by road access.

Roads present a physical barrier for small animals, such as red-backed voles, pocket gophers, frogs, and others that use cover for protection. The 20-30 feet of bare soil on a road's surface can present a migration obstacle that these species will not cross. Those that do try to cross face a high risk of predation from raptors and other visual feeders who can spot animals trying to cross a roadbed. Over 70 percent of the 91 broad-scale species of focus used for ICBEMP were found to be negatively affected by one or more factors associated with roads (*ICBEMP FEIS, pages 114-121).*

Road densities affect habitat use patterns of big game and other wildlife species that utilize the AA. Roads and their associated use will continue to be the most significant factor affecting how big game and other wildlife species use the AA. Elk mortality relates directly to roads. Vulnerability of deer and elk during hunting season is particularly influenced by road density and use.

The closed roads that aren't overgrown are used by OHVs (off-highway vehicles), especially during hunting season, and on roads that are adjacent to dwellings in the

Stices Gulch area. The Forest Plan allows this type of use by off-road vehicles. Certain areas that have gentle slopes with widely spaced vegetation also receive off-road use.

Snowmobile use can cause big game wintering in the area to expend energy escaping the intrusions, reducing fat reserves needed to survive the winter.

Cumulative Effects

The AA has been impacted by past timber harvest, grazing, sporadic wildfires, noxious weeds, human presence, and roading. Species that have been impacted by past management and human activities in the Stices Gulch Interface AA include: bobcat, cougar, American marten, pileated woodpecker, black bear, elk, red-backed vole, primary cavity nesters, and various small mammals and birds associated with mature and old forests. This is not to say that all these species are experiencing declines or risk of endangerment, but their habitat use patterns and distribution have likely changed as a direct result of management activities. Changes in habitat use patterns are not necessarily negative, unless those changes involve animals resorting to sub-optimal habitat because their preferred habitat has been altered.

Additional snag habitat in past treatment units would gradually develop as these stands grow and snags are naturally recruited. Snags would likely reflect inherent levels across the AA within 150 years in the absence of large-scale disturbances.

Mitigations for wildlife habitat are listed on pages 75-78.

Effects Common to the Action Alternatives

Introduction

This wildlife effects discussion addresses big game, management indicator species (MIS), and proposed, endangered, threatened, and sensitive (PETS) species listed under the Endangered Species Act, on the Regional Forester's Sensitive Species List (Region 6) of the Forest Service, the Bureau of Land Management Sensitive Species List, and the State of Oregon Sensitive Species list. Neotropical migratory birds are also addressed. There are two designated old growths (DOGs) within this analysis area. The action alternatives would include designation of a travel corridor between the two DOGs, as well as establish two pileated woodpecker feeding areas.

For this analysis, big game includes deer and elk. Rocky Mountain elk are also a management indicator species. Other MIS that may be found in this AA include pileated woodpeckers, northern goshawk, pine marten, and primary cavity excavators (PCEs). The role of MIS is described in the Forest Plan (page 2-9).

Sensitive Species

Wolverines are associated with wilderness, upper montane, and sub-alpine zones. However, the three-year winter tracking survey (1991-94) done on the Wallowa-

Whitman National Forest indicated wolverine would use low elevation areas (lower than 4,800 feet), such as big game winter range, at least during winter months. A small population of big game winter in the AA. ODFW maps delineate the northern Stices Gulch area as deer winter range. Wolverine will follow big game to their winter range if there isn't much human disturbance (Schommer, 1993).

It is unlikely that wolverines would use the Stices Gulch area due to the presence of humans and numerous roads, although they may incidentally travel through the AA. In the early 1990s there was an unconfirmed wolverine track found in the Black Mountain vicinity, which is approximately 6 miles northwest of the analysis area. The AA doesn't contain quality or even moderate wolverine habitat, however, traveling wolverines most likely would use riparian and ridgeline areas. There may be incidental impacts to areas wolverine could travel through under any of the action alternatives from thinning and fuel reduction activities. The action alternatives may impact individuals or their habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

There is only one pond on NFS land that is known to contain habitat for spotted frogs. The pond is not within a treatment unit. Riparian, bog, seep, and spring areas would not be impacted under any of the proposed alternatives. Stream shade, large woody material, and other elements of riparian zones will not be affected. Therefore, none of the alternatives considered will affect **spotted frogs** or their habitat.

Big Game

The action alternatives, including individual unit prescriptions were designed in such a way as to retain some of the better cover and retain some natural travelways for big game. Some areas of cover would not be retained, because if left intact, they would not meet objectives of reducing the risk of a high-intensity, high severity fire in and around Stices Gulch. Areas that could serve as security and travelways for big game are generally the north-facing slopes, drainages and the fir plant associations where fewer activities are planned. The designated travel corridor between the two DOGs, developed as part of this analysis, retains some of the best hiding and thermal cover in the AA. However, the action alternatives would impact big game habitat by opening up the understory and overstory canopy over the short and long term, up to 25 years and over 100 years, respectively.

Big game would probably be more impacted than many of the other wildlife species inhabiting the AA because so much of the AA and the surrounding area has been opened up through harvest and wildfire in the last 15 years. Spacing between trees in much of the area has been increased, back to more sustainable levels so that much of the area that had been providing hiding and thermal cover for big game is now more open. Natural regeneration of trees would provide hiding cover within 10 years. However, periodic prescribed burning would remove much of the regenerated hiding cover. This would not occur throughout the landscape at the

same time; there would be hiding cover regenerating in various parts of the AA at any given time to provide some degree of cover for big game.

Thinning and burning prescriptions were designed to retain and/or enhance the mountain mahogany within the AA. Mountain mahogany is an important food source of big game.

DOGs

There would be no treatments within the Road 11 DOG under either of the action alternatives because of its mainly north facing, fir type characteristics. Both Alternative 2 and 3 would include some light underburning in portions (units 117 and 120) of the Alder DOG. The underburning would be accomplished on south slopes in the open ponderosa pine type. The large stand of mountain mahogany and eastside draw in Unit 120 would not be underburned. The underburns would help to maintain the stands open ponderosa pine character. Underburning would help to retain the DOG for the long term. When the benefits of low intensity burns (such as increased forage and forage palatability) are taken into account, the long-term benefits outweigh any short-term negative impacts. The burn would have low-severity, low-intensity impacts. The underburns would help prevent high-severity, high-intensity stand-replacement fires in the future. This type of fire destroys old-growth stands (particularly ponderosa pine), removes many acres of cover for wildlife, burns deeply into the soil, reduces the recovery of vegetation, can burn out riparian vegetation, and kill some wildlife. The north-facing slopes of the Alder DOG would not be burned because it has a dense under and overstory. Underburning around this area would help to prevent a future wildfire from getting into this stand and destroying the habitat. Retaining and designating the travel corridor between the two DOGs would help maintain functionality of the old growths.

Pileated Woodpecker Feeding Areas

Both action alternatives would create pileated woodpecker feeding areas adjacent to the DOGs (see map, page 122). Both of these areas contain the best feeding habitat in the vicinity and are adjacent to the AA. No treatments other than some possible underburning are planned in these areas in the near future. Pileated woodpeckers have been seen in both areas in the past. These feeding areas have both been treated within the last ten years. The stands contain large green trees and snags although they are uncommon. These feeding areas average two hard snags ten inches dbh or larger per acre, which meets Forest Plan direction. The feeding areas provide habitat for other primary cavity nesters as well.

Travel Corridors

During the analysis for both the action alternatives a travel corridor was developed from the Alder DOG to the 11 Road DOG (see map, page 122). This corridor is somewhat limited in its function for wildlife. Highway 245 is between the two DOGs as well some open Forest roads. However, the corridor is located in a strategic

area and would be useful to wildlife. There were no opportunities for a roadless or unmanaged travel corridor between the two DOGs in this instance. The new designated travel corridor is the best habitat that exists between the DOGs. Management practices were modified during the layout of this project in such as way as to retain as much cover for wildlife as possible and still accomplish the objectives of the fuels reduction project.

The corridor would be designed to retain trees greater than 9 inches in diameter that contribute to canopy closures greater than or equal to 50 percent between the Alder and Road 11 DOG. If site potential does not allow 50 percent or greater canopy closure, canopy closures within the top one-third of site potential would be retained.

The map on the next page displays the travel corridor and feeding areas planned under the action alternatives.

Insert travel corridor/feeding area map

Management Indicator Species

The action alternatives would maintain and enhance the large tree component of this ecosystem. These actions would benefit **pileated woodpeckers** (BLM sensitive species) in the long term.

Precommercial thinning would not have a long-term adverse effect on pileated woodpeckers or their habitat. However, thinning the understory removes hiding cover pileated woodpeckers would use while being pursued by predators.

Precommercial thinning prescriptions are designed to remove the ladder fuels from the base of snags. Work activity associated with precommercial thinning may disrupt nesting pileated woodpeckers. If an active pileated woodpecker nest is discovered within any thinning unit (commercial or precommercial), the Forest Service contract administrator would seek cooperation from the contractor to delay work activity until the young have fledged (see page 77 for BLM mitigation).

Low-intensity burns should have minimal effects to pileated woodpecker habitat. Although underburning would create additional snags, the majority of these would be of small diameter and unsuitable for pileated woodpecker use.

The mountain mahogany and aspen enhancement projects would not have an effect on pileated woodpeckers. Thinning conifers from aspen and mountain mahogany would have some short-term negative effect while providing long-term benefits for primary cavity excavators (PCEs). Fencing the riparian area and aspen would not noticeably affect PCEs.

Effects of the wildlife habitat improvement projects would be the same for PCEs as for pileated woodpeckers, although some of the smaller diameter snags can be utilized by the PCEs.

Snags and down logs are key habitat elements for PCEs. However, the larger the size of the snags or the down logs, the better they are for PCEs. Retaining a few unharvested patches would be beneficial for PCEs.

For the most part, snags of any size or species adjacent to open and some closed (but used roads) are being removed for firewood. A large number of snags have already been removed from accessible areas. Closed roads re-opened for management activities would be re-closed after project activity**.** Closed roads opened for project activities will have some snags posted to deter woodcutters, should any use the roads while they are open. Inoculated and topped trees within the AA all have wildlife tree signs and orange paint to deter fuelwood cutters from cutting the trees.

Approximately 1½ miles of Road 1120850 are planned to be opened temporary for harvest and burning activities by breaching an earthen barrier.

Effects of the action alternatives are similar for PCEs as those described for pileated woodpecker, though many PCEs do not require large snags to nest. The white-headed woodpecker (BLM sensitive) may increase in numbers following treatment in this area, because in the long term, treatment should increase the amount of old-growth ponderosa pine. White-headed woodpeckers need open canopy pine stands for nesting habitat.

Precommercial thinning prescriptions would remove potential habitat for PCEs. Work activity associated with precommercial thinning could be disruptive to nearby nesting/brooding PCEs. Precommercial thinning also sets the stage for future larger snags and down logs. This type of thinning would also remove ladder fuels and slash from the base of existing snags, reducing the vulnerability of snags to prescribed burning or wildfire.

Prescribed burning would be designed to produce different effects on the landscape compared to a wildfire. The difference between prescribed and wildfire is described in the goshawk section below. However, unlike the species mentioned thus far, prescribed burning has the potential to render some PCE habitat components unsuitable (e.g., substantial charring of smaller diameter down wood). On the other hand, a stand-replacing fire would have the immediate result of eliminating considerable habitat for some PCEs. However, within one year after a large fire, certain PCEs (e.g., hairy woodpeckers, black-backed woodpeckers (BLM sensitive), and northern three-toed woodpeckers (BLM sensitive)) would increase in numbers. Prescribed burning may benefit woodpeckers with an increase in foraging and nesting habitat. It is expected that the fire would kill some trees. This would provide future snags for nesting and insect habitat that would be forage for woodpeckers.

The query for northern **goshawk** (BLM sensitive) habitat within the AA indicates that there is habitat within the southwest portion of the AA. There was also a goshawk sighting in the vicinity of Units 4 and 5. The southwest area would be whip felled and pile burned, while Units 4 and 5 would be commercially thinned (Alternative 2 only), whip felled and hand piled. The hand piles would then be burned. Units 4 and 5 may also be underburned. Although these areas might contain habitat for goshawks in the AA, other areas in the AA also provide habitat, as evidenced by goshawk sightings elsewhere in the vicinity. As noted in the mitigations on page 77, if an active goshawk nest is found nest during unit layout, it would be protected and buffered from planned activities. In addition, surveys to determine occupancy and nesting locations for northern goshawk would be conducted prior to management activities on BLM lands. If a nest were to be found fuels reduction activities would be allowed in goshawk nesting areas, however, seasonal restrictions would be followed.

Precommercial thinning prescriptions under the action alternatives would have both positive and negative effects on northern goshawk habitat. Precommercial thinning would reduce the density of smaller diameter trees, providing a more open forest understory while retaining canopy closure. This results in increased opportunities for northern goshawks to be more successful in capturing prey.

However, goshawks prefer a multi-layered stand, which precommercial thinning would reduce. Goshawks are adept at moving swiftly through multi-layered stands, which aids in its ability to remain undetected. Precommercial thinning would remove ladder fuels, reducing both the risk and potential severity of a wildfire. Precommercial thinning work activities also have the potential to disrupt nesting northern goshawks. If an active northern goshawk nest is located within a Forest Service thinning unit, the Contract Administrator would seek cooperation from the contractor to delay operations until after the young northern goshawks have fledged from the nest.

As with other MIS, burning has the potential to remove or change habitat components important to the northern goshawk. Burning would reduce fuel loading and lower the severity of wildfire. The effect of fire (either prescribed fire or wildfire) needs to be examined in terms of short and long-term effects. Both kinds of fire have the potential to have a short-term adverse effect on the northern goshawk. These short-term effects may be manifested in terms of a direct loss of habitat (e.g., a nest stand is destroyed by fire) or an indirect disruption of nesting activities. However, the prescribed burns would be designed to be low intensity and create a mosaic of burned and unburned habitats within a confined area. Prescribed fire under the above conditions would have a long-term positive effect on the northern goshawk.

Generally speaking, the prescribed fire units would be in more open habitat that is less likely to contain goshawks. Wildfire, on the other hand, would burn with high intensity (stand-replacing), would not be confined, and would create less of a mosaic pattern. Depending on the circumstances, the adverse effects of a wildfire on northern goshawks may be long term.

Pine marten have not been observed in the AA, however one was seen just outside of the area in the early 1990s. Generally pine marten are found in the more cool/moist biophysical environments. This AA contains marginal habitat for pine marten because of the limited and dissected nature of the old-growth structure. The action alternatives would maintain and/or enhance the large tree component of this ecosystem, which would benefit pine marten in the long term. The existing DOGs would not be thinned, however, underburning in the Alder DOG would reduce the number of young trees within the stands. Outside of the DOGs, thinning would reduce stands from multi-story to mostly single story stands or where single story stands already exist in some cases spacing would be widened. In the short term, thinning would remain an option to hasten the development of large trees and reduce the risk of fire to large diameter snags and down logs, which are important pine marten habitat.

Work activity associated with precommercial thinning may disrupt denning pine marten. Precommercial thinning, at least during the short term, would have a negative effect on pine marten habitat because it opens up the canopy and reduces tree layers. Although pine marten often hunt on the ground, they depend on cover and large logs to stalk their prey. Units outside of the DOGs currently lack large logs.

Low-intensity burns should have minimal effects to pine marten habitat and may improve habitat for some of its prey species. Although underburning would create additional snags, the majority of these would be of small diameter and unsuitable for pine marten use. In ponderosa pine plant associations, frequent low-intensity fires would be included as management options.

The wildlife habitat improvement projects would have little or no effect on pine marten. Thinning conifers from aspen and mountain mahogany would have some short-term negative effect while providing long-term benefits for potential pine marten prey.

State-Listed Species

The management activities proposed within the action alternatives would not likely have an adverse effect on either the pallid (BLM sensitive) or fringed myotis (BLM sensitive) bat species. Treatment activities are expected to affect the number and distribution of insects within the AA. Thinning trees and leaving the residual stand more vibrant and healthy may reduce the numbers of certain insects. However, burning can also increase the numbers of certain insects. Over the long term, additional large diameter ponderosa pine would develop with plate-like bark available for day roosts. Management activities in the area would retain the inoculated and topped trees that are within units.

Management activities that take place within Douglas-fir and true fir stands would have the greatest potential to adversely affect the great gray owl (BLM sensitive). Leaving clumps/patches within the harvest units would retain habitat that is important for the owl and its prey species. Precommercial thinning would likely improve hunting habitat conditions for the owl because it is easier to maneuver in open stands. However, nesting habitat would be reduced because canopy closure would be reduced and some of the multi-story stands would become mostly single-story. Low-intensity prescribed fire would improve habitat conditions for the principle prey species of the owl.

Prescribed burning would have both a positive and negative effect on flammulated and pygmy owls (BLM sensitive). Both of these species will nest in smaller diameter snags (10" diameter) if large snags are not available. Even under a low-intensity fire, the smaller diameter snags may be damaged to the point that they will fall, making them unsuitable as nest sites for either the flammulated or pygmy owls. However, low-intensity burns are necessary to reduce fuel loading and maintain the larger diameter trees and snags within the pine-dominated forests. Burning would also improve habitat conditions for the prey species of both these owls. Neither of these species has been documented in the AA.

Other Raptor Species

A patchwork of both treated and untreated habitat is beneficial to both the sharp-shinned and Copper’s hawks. Both action alternatives would treat about 60 percent

of the AA. Both species have the potential to be disrupted during the nesting/brooding period. If a nest of either species is discovered within any management unit, the Forest Service Contract Administrator would seek cooperation from the contractor to delay work activities in this area until the young have fledged.

No adverse impacts to raptors from prescribed burning are anticipated. There is potential for increase in raptor usage of the burned areas. They are commonly drawn to burns to forage for escaping prey. Also, raptors would continue to frequent the area due to the expected increase in small mammal numbers following burning.

Neotropical Migratory Birds

Neotropical birds utilizing the AA would experience both negative and positive effects from implementation of the action alternatives. The short-term negative effects would be offset by longer-term benefits from the reduction of wildfire hazard. Enhancing browse species within the AA would have a beneficial effect for several species of neotropical migratory birds. Impacts of prescribed burning on nesting birds would be greatly reduced by limiting most of the burning to prior to May 1 or in the fall (mitigation, page 72). In addition, the entire area would not be underburned during one burn season. The majority of the project area would be hand piled and the piles burned prior to May 1 or in the fall.

Effects Common to the Action Alternatives

Silvicultural practices have a potential to both reduce and enhance forest structure/complexity. Units with the largest number of acres of commercial in combination with precommercial treatment have the greatest potential to affect habitat for wildlife. Silvicultural prescriptions would be limited to commercial (Alternative 2) and precommercial thinning (both action alternatives). Commercial thinning is prescribed for approximately 20 percent of the total acreage planned for treatment.

Riparian, bog, seep, and spring areas would not be appreciably altered under any of the action alternatives. Precommercial thinning units would include treatment of natural fuels along with the thinning slash. However, stream shade, large woody material, and other elements of riparian zones would not be affected. Both action alternatives include precommercial thinning units that are adjacent to riparian areas.

Precommercial Thinning

Precommercial thinning acreage varies between Alternatives 2 and 3. Precommercial thinning would remove smaller trees (generally less than 7 inches in diameter, most less than 5 inches, but can include occasional trees up to 12 inches dbh). These smaller diameter trees function as hiding cover for big game. As with

commercial thinning, precommercial thinning would have the greatest impacts within the Douglas-fir and mixed conifer stands, where stands tend to be denser than in ponderosa pine stands.

Hand thinning is more selective and better able to protect micro-sites and provide small clumps for hiding cover. However, vegetation suitable for wildlife hiding cover would be removed under both action alternatives to meet the intent of the purpose and need for this analysis. As stated in the mitigations, viable hiding cover within 75 feet of open and closed roads would be retained to create a screen. In cases where retaining cover would endanger the defensibility of the unit during a wildfire, the hiding cover would be removed (see page 76).

Prescribed Burning

All of the plant associations that provide habitat for big game change over time. Ponderosa pine-dominated plant associations sustain themselves better with frequent low-intensity fire. Burning inhibits the smaller diameter trees (particularly fir) from establishing themselves, while at the same time invigorating shorter-lived shrubs (bitterbrush) and herbaceous plants. Both provide excellent forage for big game. Fire also creates gaps in the forest canopy, which promote the growth of dense patches of small ponderosa pine trees. Some of these patches persist on the landscape, providing big game hiding cover.

In the short term, the units that are underburned would offer more palatable forage for big game but would not provide the cover present before treatment. Long-term effects would depend upon what type of follow-up treatments are utilized. If no further treatment is done and no wildfire impacts the area, the landscape would eventually regenerate with trees, which provide more cover but less palatable forage for big game.

The burn plan is similar for both action alternatives and prescribed burning would be implemented over several seasons, depending on weather conditions and funding. Prescribed burning would create a mosaic and edge effect across the AA. The burns would be of low intensity for the most part, but would reduce much of the remaining hiding cover within the units that are underburned. Forage palatability and availability would increase. The negative effects for big game would be short term if clumps of cover can be maintained in precommercial thinning units and if the remaining trees and the shrubs that re-sprout following burning are not further disturbed, but are able to grow back into hiding cover between burns. These units are planned to be prescribed burned again within 10 to 20 years. Although regular prescribed burning is planned, the entire AA would not be burned during each prescribed burn, and there would likely be patches of cover available in various places at different times. The larger patches of mountain mahogany, which is less fire tolerant than many of the other plant species in this area, would not be underburned.

Prescribed burns would have variable effects to the diverse array of wildlife species that inhabit the AA. Late spring burns would have the largest impact on ground

and low nesting birds. Depending on the timing of the burn, they may be able to relocate their nest if it is destroyed during burning. Spring wildfires are rare on this landscape, so effects on plant phenology are not well understood. As mitigation, the majority of spring burning would be completed by May 1 or in the fall, reducing impacts to nesting neotropical migrants and other ground-nesting birds (page 72).

The effects of fire (prescribed fire) on wildlife and habitat are both indirect and direct. The indirect effects include the increase in food availability and palatability, loss of cover types, and an increase in biodiversity. Direct effects such as mortality are considered minor for all species (Agee, 1996). However, even if there is an incidental loss of individual migratory birds, prescribed burning takes place on a very small fraction of the Baker Ranger District each year. When the benefits of low intensity burns (such as increased forage and forage palatability) are taken into account (which enhance habitat characteristics for wildlife), the long-term benefits outweigh the short-term negative impacts. The Blue Mountains Ecosystem was historically affected by low-severity, moderate-severity, and high-severity fire regimes. These fire regimes have interacted with the flora and fauna throughout time. The plants and animals of the Blue Mountains have adapted to persist individually or as a population.

Since the introduction of fire suppression, buildup of natural fuels and changes in plant communities (fir invasion) have changed the fire regimes. Wildfire effects have evolved from low-severity, low-intensity impacts to high-severity, high-intensity stand-replacement impacts. This type of fire destroys old-growth stands (particularly ponderosa pine), removes many acres of cover for wildlife, burns deeply into the soil, reduces the recovery of vegetation, can burn out riparian vegetation, and kill some wildlife.

The action alternatives propose to implement low-intensity fire that would burn in a mosaic pattern within the designated units, which would include some moderate-intensity burning. The goal is to mimic the natural low-severity fire regime. General timing for the prescribed fires is spring (March-April) and/or fall (September-November). Spring burns are expected to be low to moderate intensity, and fall burns slightly hotter. Because of the presence of more moisture in the spring, spring burns generally consume fuels less than 2 inches in diameter and can be expected to be low to moderate in intensity. Fall burns, however, can consume larger fuels because this is usually a drier time of the year, and burns can be hotter. Fall burns would have less impact to migratory birds, which have generally left (or are leaving) this area by this time.

Direct effects of prescribed fire to small mammals can include mortality and expulsion from their home range. Expulsion would be due to the temporary loss of cover (hiding cover from predators) and temporary loss of food source. Loss of cover is a short-term effect. Small herbivorous mammals would return to burn areas as vegetative production increases. This is expected within 1-3 years post-burn (Crane and Fischer). The expected low intensity/severity of prescribed fire and minimal burning within riparian zones would have even less adverse effect on small mammals than discussed above. The expectation of low impacts is based on the

resulting mosaic of burn versus remaining vegetation (cover would be available), remaining large logs that would be intact for cover, and soil temperatures that would remain cool, providing protection. There is likely to be an increase in population numbers of some species within 3 years of the burn because of the increase and variety of vegetation.

The direct effects of prescribed fire on neotropical migratory birds would occur primarily during breeding season (spring fire). The loss of nests and young could occur under all intensity regimes. In cases of low to moderate fire severity regimes, ground and shrub nesters are more at risk than canopy nesters. Many species can overcome these losses by re-nesting and producing a second brood, especially if spring burns don't continue past May 1.

The indirect effects of low-intensity fire are an increase in diversity with no change in total breeding bird populations (Johnsen and Wauer, 1994). In other studies very little change in diversity and population has been noted in wildfires (Lyon and Marzluff, 1984; Agee, 1996). A study of the Twin Lakes Fire (1994), which occurred on Pine Ranger District, WWNF, indicated a decrease in populations and diversity the first year after the fire, but increases in year 2. Many neotropical migratory birds are associated with riparian habitats. Riparian habitats are not planned for underburning, except for incidental creeping fires; hand piles would be burned. This type of burning would result in minimal impacts to neotropical migratory birds.

The effects of low to moderate intensity fire on game birds (ruffed and blue grouse, wild turkey) are expected to be slight. These game birds are fire-adapted or fire-dependent. This means that fire plays a major role in their habitat requirements. Potential direct effects (spring fire) are nest loss. This is not expected to be a severe impact, because blue grouse and certain subspecies of wild turkey would re-nest. A benefit to these species is the increase in forbs for adults and an increase in insect populations for the young.

There would be no long-term direct effect to deer, elk, badger, bear or other predators. A short-term loss of hiding cover on portions of the areas would occur. In units where there is a dense understory of regenerating trees (hiding cover), low-severity fire is expected to burn a portion of these, possibly producing small pockets of loss. This effect would be very small when evaluating cover in the entire AA. The cover/forage ratio within the AA is currently approximately 2/1 when marginal cover is considered cover rather than forage. The impacts from burning would impact cover and movement corridors for large mammals. The response of forage and browse plant species is expected to provide more and better quality food source for ungulates, however hiding and thermal cover would be negatively affected, at least for the short term. Predators are expected to benefit indirectly due to the increase in large and small prey species that would inhabit the post-burn areas (Crane and Fischer).

No adverse impacts (direct or indirect) to reptiles or amphibians are anticipated. The intensity of prescribed fire would not reduce cover (for species themselves or

prey species) enough to reduce the prey base in the long term. Most species of reptiles and amphibians would be able to escape fire effects by either going underground or remaining in wet habitats.

No adverse impacts to raptors are anticipated. There is potential increase in raptor usage of the burned areas. They are commonly drawn to burns to forage for exposed prey (Lyon and Marzluff, 1984). Also, raptors would continue to frequent the area due to the expected increase in small mammal numbers following the burn that are drawn to the new vegetation.

Woodpeckers may benefit from burning because of an increase in foraging and nesting habitat. It is expected that some trees would be killed by the fire, providing future snags for nesting and insect habitat that would be forage for woodpeckers. No long-term adverse impacts to cavity nesters are expected from the implementation of the project.

Roads

Management activities in portions of the AA would result in areas becoming more open and, in some areas, more easily accessed by motor vehicles. This in turn results in less security for big game. Any roads that are currently closed that are opened for management activities involving equipment/machinery would be effectively closed soon after management activities cease. Approximately 1½ miles of Forest Road 1120850 would be opened (fill in earthen berm) to access Unit 10. During the open period, mitigation is in place to discourage leaving the road open for extended periods of time of non-use. Several management units were designed in such a way as to retain hiding cover in key places within the AA and hiding cover within 75 feet of both open and closed roads would be retained wherever possible.

Logging operations in the early summer could impact deer fawning. This disruption would likely lead to an increased vulnerability of deer fawns to predation. Logging operations in the late fall should not appreciably interfere with big game movement to lower elevations**.** These impacts are not expected to lead to an increase of big game damage complaints on private land**.**

Habitat Enhancement Projects

Conifers have begun to overtop and out-compete the few remaining aspen trees along Trail Creek. If unchecked, conifer competition would continue to severely reduce the health and resiliency of the aspen. Conifer trees up to 18 inches dbh would be cut and left in place (jack-strawed) to protect young clones from grazing. Slash not required to protect young suckers would be hand piled and burned. Individual trees throughout the AA would also be released where there is an opportunity. Approximately one acre (total) of the AA would be treated in this manner. Both action alternatives include the removal of the conifers, which would release these trees, as well as provide an opportunity for the existing trees to produce suckers. In some cases, selected overstory aspen would be felled to initiate regeneration. If funding becomes available the Trail Creek aspen and riparian area

would be fenced to keep out both livestock and big game. Fencing the treated area is necessary to protect and help establish suckers along the drainage. A sturdy, high fence is required that would last 10-15 years.

Thinning conifers from aspen, Scouler's willow and mountain mahogany would reduce cover in the short term, but should provide a valuable food source in the long term. Should the conifers not be thinned from these species, these specific habitats would be at risk from conifer competition. The loss or degradation of these habitats would have negative effects on big game. Slash pull back from existing snags and down logs would have little effect on big game.

Mountain mahogany sites throughout the AA may also be treated as funding becomes available to establish and protect seedlings as well as create more vigorous plants. Trees would be left adjacent to mahogany plants, the ground would be scarified, trees felled over the mahogany, and mahogany branches cut. The felled trees and branches would provide protection for mahogany seedlings. If funding becomes available portions of the larger mahogany patches would be fenced. These projects would perpetuate an important source of both food and cover for big game as well as a variety of other wildlife species. Mountain mahogany treatments may be applied in Units 10, 11, 102, 105, 115, 117, 120, 124 and 164.

There are few Douglas-fir and grand fir micro-sites located within the units proposed for commercial harvest. These micro-sites provide good hiding cover for big game. Where these micro-sites do not interfere with the retention of large diameter ponderosa pine or fire objectives, they would be left untreated. During prescribed underburning, lighting would not occur within these micro-sites, however, fire would be allowed to creep into them.

Summary of Effects of Combined Activities

Implementation of both action alternatives would have about the same effect on existing larger diameter snags. Alternative 2 includes some commercial thinning but there would be little need to fell snags for operator safety or for skid trail and machinery location due to unit design. Tree marking would be done in such a way as to avoid snags greater than 12 dbh (diameter at breast height). Precommercial thinning and prescribed burning would impact small diameter trees, and the residual trees would eventually contribute to snag levels. Under Alternative 2, commercial thinning would remove some trees that may become snags in the short term, due to insects, disease, or other incident. The primary difference is the age of trees under management; Alternative 3 manages mostly smaller and younger trees, while Alternative 2 would manage both older trees and younger trees, at least in units that would have commercial thinning. Under Alternative 2, mechanical slash treatment would be used in combination with some of the thinning units (commercial and precommercial). There would be incidental impacts to wildlife and habitat (noise, continued disturbance, etc). Under Alternative 3, hand piling would be the method used to manage slash, which would allow wildlife opportunities time to hide, move away, or leave the area entirely.

Prescribed burning and precommercial thinning prescribed under both action alternatives would open up stands and create more palatable forage for big game, birds, and small mammals. These treatments would contribute variable effects to the diverse array of wildlife species that inhabit the AA. The proposed management practices under both action alternatives would open up the vegetation, which would provide a less secure environment for most wildlife species.

The proposed prescribed burning effects on wildlife within the Stices Gulch Interface AA would be expected to be beneficial, slight or result in no impact. This determination is based on low fire intensities, natural history of the species and their relationship to fire, the limited acreage affected at any one time, short duration of implementation, and the mitigations proposed. Burning is expected to result in habitat improvements, including forage quality enhancement, a slight increase in snag levels, and increase in species diversity.

Effects Specific to the Action Alternatives

Alternative 1

Implementation of the No Action Alternative would have no immediate effect on wildlife or their habitats within the AA. Implementation of this alternative does not mean that change (plant community, habitat niches, and fuel loading/structure) would stop at this point in time. The effect of implementing this alternative would be to increase the potential for stand-replacement fires over larger acreages. Habitat monocultures (reduced diversity) would result in extirpation or displacement of species dependant on open park-like stands (ponderosa pine/white-headed woodpecker).

Indirect Effects

Big Game

The No Action Alternative is basically the existing condition, changing through time. The No Action Alternative will be discussed in terms of the short term (5 years) and the long term (100 years).

Over the short term, habitat conditions for big game within the AA would change only slightly. The amount and quality of hiding cover would remain about the same within the AA. Thermal cover within the Douglas-fir and true fir plant associations would not change. The overall condition of important browse species would decline slightly.

Over the long term, habitat conditions for big game across the AA have the potential to substantially change. Existing hiding cover would grow into densely stocked stands. These densely stocked stands would be vulnerable to a variety of outside forces (i.e., fire, insects, and disease). Pockets of trees could succumb to insects, become snags, and then fall to the ground. Young trees would become

established within the tangle of snags and down logs. This cycle would take place over approximately 100 years and would happen randomly across the landscape. Hiding cover would likely increase over time and the availability of palatable forage would decrease.

Thermal/hiding cover within the Douglas-fir and true fir stands would continue to be affected by endemic populations of insects and diseases. Insects and disease would move from the understory to overstory trees. This would have a tendency to affect the quality and quantity of cover within the AA.

The overall condition of important browse plant species would decrease. Within certain locations of the AA, species such as aspen, antelope bitterbrush, mountain mahogany, and Scouler's willow may disappear entirely.

The Alder DOG would be more susceptible to wildfire because it would not be treated. No travel corridor or pileated woodpecker feeding areas would be established.

Threatened/Endangered Species

Implementation of the No Action Alternative would not alter the existing condition of the AA and in the short term would have no effect on potential wolf travel habitat; however, this alternative would leave the landscape more susceptible to wildfire as well as insect and disease outbreaks. Implementation of this alternative would have no effect on wolves or their habitat.

Sensitive Species

The AA is not considered primary habitat for wolverine due to presence of people and the existing road densities. Implementation of Alternative 1 would not impact current conditions for the wolverine in the short-term, but over the long term, the risk of losing the better travel habitat is increased due to the likelihood of wildfire. Spotted frog habitat would not change.

Management Indicator Species

No designated **northern goshawk** (BLM sensitive species) habitat exists within the AA. A query to map goshawk habitat within the Stices Gulch Interface AA displayed potential habitat in the southwest corner of the AA, which is south of the Stices Gulch residences. Although a goshawk was observed during field reconnaissance, no nests were found. Habitat for goshawks should increase over time, unless there is a large wildfire.

Over the short term, habitat conditions for the goshawk would not likely change. Habitat conditions may improve for the prey species of the goshawk. Clumps of mature trees at least 30 acres in size should be present within the AA for goshawk nest sites. However, the juxtaposition of the clumps cannot be predicted. Poor

distribution could mean fewer pairs of goshawks utilizing the AA, even though prey abundance could increase.

Effects on the **Rocky Mountain elk** are discussed under "big game" above although this AA contains better habitat for mule deer.

Habitat is available but limited for the **pileated woodpecker** (BLM sensitive species) within this AA. Over the short term, habitat conditions for the pileated woodpecker would change slightly. The number of large diameter snags (potential nest sites) would continue to decline adjacent to roads in the AA due to fuelwood removal. The recently inoculated and topped trees within the AA would eventually become habitat for the pileated woodpecker as well as other woodpeckers and cavity nesters in the area. Snag levels where road closure devices are effective would remain about the same. Pileated woodpecker numbers would not decline over the short term.

Over the long term, habitat conditions for the pileated woodpecker would change. The numbers and distribution of large diameter snags adjacent to roads in the AA would decline. In more inaccessible areas, snag levels would remain about the same or increase slightly. Pileated woodpeckers would continue to use the limited LOS, forested riparian corridors, and draws. Pileated woodpecker habitat would be more at risk from wildfires than under the action alternatives. Pileated numbers should remain about the same or slightly increase within the AA over the long term.

There would a slight change in habitat conditions for the **PCEs** (primary cavity excavators) utilizing the AA over the short term. Small diameter trees would likely continue to die or be killed, providing some additional habitat.

Habitat for some PCEs (e.g., common flicker, mountain chickadee, white-breasted and red-breasted nuthatch) would increase over the long term. PCEs dependent on large diameter ponderosa pine trees (both alive and dead; e.g., white-headed woodpecker and pygmy nuthatch) would likely decrease in numbers.

Over the short term, habitat conditions for the pine marten are marginal and would change slightly. The AA in general does not contain many large diameter snags. The number of large diameter snags (potential den sites) would continue to decline adjacent to roads in the AA due to fuelwood removal. As trees inoculated and topped begin to die, more large diameter snags would be present on the landscape. Snag levels within inaccessible portions of the AA and where road closure devices are effective would remain about the same. Pine marten numbers/habitat should not decline over the short term.

Over the long term, habitat conditions for the pine marten would change slightly unless there is a landscape-altering event. The numbers and distribution of large diameter snags adjacent to roads in the AA would decline considerably. In more inaccessible areas, snag levels would remain about the same or increase slightly. Pine marten would continue to use the available LOS, forested riparian corridors, and draws. As ATVs and snowmobiles continue to get more powerful, their use is

expected to increase in this area, which could impact pine marten security. Pine marten numbers should remain about the same within the AA over the long term.

State-Listed Species

The increase in snags/down logs and insect/disease-infested trees would likely create an abundance of insects within the AA. An increase in insects means more prey for the pallid and fringed myotis bats, as well as the flammulated and pygmy owls. All four of these species prefer large diameter snags for nest and roost sites. With the availability of nest/roost sites it is likely that these species could exploit an increase in prey abundance. Prey abundance for the great gray owl would increase, however nesting habitat will decrease.

See also the cumulative effects discussions, pages 118 and 141.

Comparison of Alternatives 2 and 3

MIS/PETS

Implementation of Alternative 2 would have very limited to no impact on PETS species, considering the habitat available and mitigations (e.g., no lighting within 25 feet of streams, pulling slash back from snags/logs). The effects of low to moderate fire intensity on the very limited wolverine (sensitive species) habitat that could be utilized is a "may affect, but not likely to cause a trend to federal listing or loss of viability" call. The prescribed burning and thinning proposed within the AA would not affect the wolf. The effects of Alternative 2 on the gray wolf and its habitat would be the same as under Alternative 3. Neither action alternative would impact spotted frog habitat.

Implementation of Alternative 3 would not reduce the risk of large natural events (wildfires, insect increase) as well as implementation of Alternative 2. Pileated woodpeckers prefer large diameter trees. Implementation of Alternative 3 would manage the smaller diameter trees (precommercial size). Eventually there would be more larger diameter trees for pileated woodpecker habitat, but in the interim, this alternative would have little impact on pileated woodpeckers. Implementation of either alternative has the potential to eventually result in larger diameter trees, which pileated woodpeckers prefer; these trees would be available sooner under Alternative 2.

Several small blocks currently supporting thermal/hiding cover are not prescribed for vegetation management under either of the action alternatives. The treatment units in these alternatives were designed to maintain some big game travelways and retain important thermal and hiding cover and still meet the purpose and need of the project proposal. There is no measurable difference in effects to wildlife between either of the action alternatives because they both open up the understory with different types of treatments.

Implementation of Alternative 2 would open up the understory slightly more than under Alternative 3.

Under Alternative 2, one-third to one-half of the timbered basal area would be removed in units prescribed for commercial thinning. The average diameter proposed for harvest is approximately 9-11 inches. The largest trees would remain in order to begin the process of reverting to a more historical character.

Forest Plan direction, including the Regional Forester's Amendment #2, and site-specific measures provide a level of mitigation from the potential effects from timber harvesting, precommercial thinning, slash treatment, and prescribed burning.

No snags would be intentionally harvested during commercial thinning (Alternative 2). Thinning prescriptions are designed to avoid cutting green trees near large diameter (greater than or equal to 18 inches in diameter) snags. However, snags may be cut due to skid trail and landing placement; the sale administrator would work with the operator to avoid this kind of situation. Incidental snags may need to be dropped for safety reasons. Any snags that are cut would remain as down logs within the unit. All harvests are understory or co-dominant tree removals. The remaining trees are more than adequate to provide green tree replacements for potential populations of cavity dwellers. Underburning and incidental equipment damage to trees would create additional snags of a variety of sizes.

The effectiveness of snag habitat is somewhat reduced when it is converted from a closed canopy setting to a more open setting. A few species (flickers, blue birds, sapsuckers) seem to do well in either setting, but others (pileated woodpeckers, nuthatches, black-backed woodpeckers) generally avoid snags in open settings.

Alternative 2 reduces the number of potential future snags but the remaining trees would be able to grow larger and faster. Bark knocked off during logging would encourage development of heart rot fungus. As these trees die, they would provide suitable sites for cavity excavation by pileated woodpeckers as long as they stand. Trees infected by heart rot would also provide suitable habitat for carpenter ants and the necessary substrate for pileated woodpeckers.

Alternative 3 retains the most snag habitat in the short and mid-term. The effect of this alternative on snags in the long-term is speculative.

Big Game

The HTH (commercial thin) prescriptions included under Alternative 2 would affect big game habitat in a variety of ways. Commercial thinning would remove tree boles and trees with crowns that extend to the ground, both of which are important aspects of big game thermal and hiding cover. Commercial thinning reduces the canopy closure and number of canopy layers in treated stands. The prescribed treatments would reduce the canopy closure to 30-50 percent, which is marginal thermal cover. Canopy closure helps to moderate hotter summer temperatures and

colder winter temperatures for wildlife. During the logging/skidding operations, some smaller trees would be uprooted and broken off. These smaller trees are important components of hiding cover. These effects would be most pronounced where commercial thinning removes trees with more full crowns, such as Douglas-fir or grand fir.

Commercial thinning, at least in the short term, would reduce the hiding and thermal cover, resulting in increased vulnerability of big game to hunting and other stresses. Under Alternative 2, 20 percent of the project area would be commercially thinned.

The best big game thermal cover is in the two designated old growths. Initially precommercial and commercial thinning as well as underburning would open up the understory under Alternative 2. This makes the big game more vulnerable and less secure. Yet historically, when disturbance processes were functioning naturally, this portion of the AA was dominated by open stands of large ponderosa pine, which were maintained by frequent low-intensity fires. This type of landscape did not contain large quantities of hiding or thermal cover for big game. At the same time this area was not heavily roaded and big game could freely migrate to and stay in the Burnt River, Bowen and Sumpter Valleys during the winter months. Deer and elk numbers were also lower. These circumstances created a less vulnerable and more secure environment for big game.

Although the vegetative landscape may be reverted toward historic function and structure over time, present human populations, roads, big game populations, and land use patterns would not return to historic conditions. The public wants and enjoys the current big game numbers and access for hunting and other recreational opportunities. Finding a feasible balance to all the factors influencing and impacting this area is challenging.

Effects to big game would be similar in both action alternatives, except implementing Alternative 2 would reduce stocking levels more than under Alternative 3. Alternative 2 would also change stocking levels, tree species composition, and stand structure more. Over the long term, the entire AA would be better protected from wildfire, insects, and disease. However, there would be less thermal and hiding cover available for deer and elk, even after young trees regenerate. Reducing stand density would create more palatable forage, however forage is not lacking in this AA.

Sensitive Species

Under Alternative 2, commercially thinning stands and cutting trees less than 21 inches dbh would reduce the number of large trees and down logs over the short-term. However, canopy closure would be retained generally at about 30 percent but would fluctuate between 30 and 50 percent. Over the long term these units would contain larger diameter trees, which are more fire-resistant, and would be better habitat for the wolverine, should one choose to travel through this area.

Management Indicator Species

The purpose of an HTH prescription in Alternative 2 is to release residual trees (i.e., ponderosa pine, grand fir and western larch) and to make the AA more resistant to wildfire. These species (dead or alive) are extremely important components of pileated woodpecker habitat. The bigger these trees are, the more valuable they are as pileated woodpecker habitat. Commercial thinning provides an opportunity for these important habitat features to become larger, faster.

A small percentage of each harvest unit may be retained in an unharvested condition. These clumps/patches would serve as sites for future snags, as well as refugia for pileated woodpeckers seeking escape cover from predators. Unharvested areas would be available as foraging and nesting sites for pileated woodpeckers. In the short term, thinning would also remain an option to hasten the development of large trees and reduce the risk of fire to large diameter snags and down logs.

Commercial thin prescriptions would remove trees that are currently, or could become, habitat for the pileated woodpecker. The foliage or crowns of the trees targeted for removal serve as escape cover for pileated woodpeckers fleeing predators. Any tree targeted for removal has the potential to become a snag and subsequently used as either a nest or foraging site by pileated woodpeckers. Even though large snags (potential pileated nest sites) would not be targeted for removal, there is a limited possibility that nesting/brooding birds could be displaced by nearby logging activity. The large tree component is limited within this AA. The inoculated and topped trees (future snags) would be protected during sale layout.

Larger trees are important to both the northern goshawk and its prey species. As with the pileated woodpecker, HTH prescriptions for Alternative 2 would remove existing and potential habitat for the northern goshawk. The foliage or crowns of the trees targeted for removal serves as habitat for some of the northern goshawk prey species. The canopy also serves as escape cover for juvenile goshawks and foraging habitat for adult northern goshawks. Some of the trees could be used as northern goshawk nest sites. Since no recent surveys have been done for northern goshawk nest sites within the AA, the potential exists to disrupt nesting activities with management operations. If an active nest is discovered within any thinning unit (commercial or precommercial), the Forest Service contract administrator would seek cooperation from the contractor to delay work activity until the young have fledged.

The HTH prescriptions in Alternative 2 would remove existing and potential habitat for PCEs. Any tree selected for removal has the potential to become a snag, which functions as forage and nesting sites for PCE species. Some PCEs forage within the foliage of green trees. Even though snags would not be targeted for removal as part of the commercial harvest, nesting/ brooding birds could be displaced by nearby logging activity. Commercial thinning would provide an opportunity for the residual trees to become larger. In the future, options for management of large diameter snags and down logs would be enhanced through the proposed commercial thinning.

Commercial thin prescriptions would remove trees that are currently or could become habitat for the pine marten. The foliage or crowns of the trees targeted for removal serve as pine marten prey habitat and escape cover for pine marten fleeing predators. Even though large snags would not be targeted for removal, there is a limited possibility that denning/nesting animals could be displaced by nearby logging activity.

State-Listed Species/Neotropical Migratory Birds

Commercial thinning would remove existing and potential habitat important to flammulated and pygmy owls. However, snags (nesting sites) are not targeted for removal. Clumps/patches retained within each harvest unit would maintain habitat important to these owls and their prey species. The unharvested areas between the harvest units would remain available for both species under Alternative 2. As with other birds, there is the potential for these species to be disrupted during the nesting/brooding time by nearby thinning activity.

The direct effects of mechanical slash treatment would be similar to commercial thin activities, although would most likely occur later in the operating season (late summer, fall), when young would be fledged and species may have already begun migration.

Cumulative Effects, Alternative 2 and 3

The effects on snag and log densities from commercial thinning should be considered in context of the existing condition in the AA and all past and planned activities. Past timber sales in this analysis area retained varying levels of snags, generally fewer than current standards. However through inoculation and tree topping of larger trees within old timber sales in the AA new snags are in the process of developing. Although snags would be retained as much as possible, Alternative 2 would contribute to a greater initial loss of snags and reduction of snags in a closed canopy context than Alternative 3. Some smaller sized snags would result from prescribed burning, and harvest practices may create a few.

The treatments prescribed under Alternative 2 would move the AA towards more historic conditions for wildlife than Alternative 3. In the long term, the AA would have a greater distribution of larger snags and down logs sooner than under Alternative 3.

G. ADDITIONAL EFFECTS / INFORMATION / DISCLOSURES

- No prime farmlands would be affected. Wetlands and floodplains would be minimally affected because no-cut RHCAs would be applied in accordance with INFISH. Precommercial thinning actions maintain shade within one tree-height of a stream. No commercial harvest would occur within RHCAs. No machine fuels treatment would occur within any stream channel. Springs, seeps, and other wet areas would be located on the contract map for protection as needed.

- No activities are planned within the boundaries of a roadless area and no actions are planned adjacent to a roadless area (see map, page C-39, Appendices, Volume I, Forest Plan EIS for roadless area locations).

- There are no research natural areas, wildernesses, or experimental forests located within the analysis area.

- Mitigation measures for known heritage sites are incorporated into the analysis and design of the harvest, precommercial thinning, and burn units. Known sites near or in harvest units are protected/avoided. Prescribed burning will avoid known sites that require protection. None of the alternatives is expected to affect known heritage sites. In the event that any previously unknown sites are discovered during implementation of any of the action alternatives, the Archaeologist will be informed and protective measures taken (Contract Clause C6.24# or equivalent).

- There are no known direct or adverse effects on consumers, women, minority groups, or civil rights. The action alternatives are governed by contracts, which contain non-discrimination requirements to prevent adverse impacts to these groups.

  The project actions themselves do not constitute an impact on environmental justice. However, certain minority groups or low-income persons may participate in implementation of some of the action items, such a precommercial thinning or noxious weed control. Government contracts contain non-discrimination clauses employers must adhere to. There is no known direct or indirect effect to people or properties that may be described under the environmental justice definition.

- There are no known significant irreversible resource commitments or irretrievable losses of timber production, wildlife habitats, soil productivity, fisheries, or water quality from actions initiated under any of the alternatives.

  Impacts to soil and water are controlled by mitigation measures, best management practices, and INFISH requirements, and would not represent an irreversible resource commitment, except for the minor acreage involved in landing sites. Efforts will be made to utilize existing landing sites to contain additional impacts.

For all practical purposes, rock is a non-renewable resource. Use of rock as surfacing represents an irreversible commitment of a resource. Due to the existing supply of rock, and the minimal amount of rock required for project use, the commitment of this resource is not significant.

Existing roads constitute a long-term commitment of a portion of land to a purpose other than timber production. No new construction or reconstruction is planned under this project. The temporary road will be obliterated.

- There are some effects produced as a result of activities within the project that cannot be avoided and may be considered adverse according to various interpretations.

  Stumps and disturbed areas are not a pleasing sight to some people, whether visually or environmentally. Truck traffic will compete with public traffic in the area. Traffic and harvest activities will also create dust and noise. Smoke from burning activities is an irritant and an unpleasant sight to some people. Landscape burning leaves black ground and black bark on some trees for a period of time.

- Relationship between short-term and long-term productivity

  Maintenance of healthy soils, in terms of organic matter and structure, is a key prerequisite to maintaining healthy ecosystems (Blue Mountains Forest Health Report). Long-term productivity depends on maintaining the basic ecosystem resources and their functions.

  For this project, implementation of BMPs, management direction, standards and guidelines, and policy as outlined in the FEIS for the Forest Plan and RMP/ROD are assumed to provide continued long-term site productivity.

  There will be some short-term loss of productivity resulting from damage to plants from the action of logging equipment and prescribed fire. Additionally, the creation of logging slash will impede the growth of plants for a short time following logging. This will last until the slash has broken down enough to allow light to penetrate to the ground and plants, or until it is treated and/or burned. There is potential for localized sites to be burned at a higher intensity than planned, due to concentrations of natural fuels. There will be a short-term loss of productivity on these sites.

- These actions do not set a precedent for other projects that may be implemented to meet the goals and objectives of the Forest Plan or RMP. Actions are consistent with Forest Plan and RMP goals and objectives in relation to management area direction, except for the No Action Alternative, which would defer implementation of the Forest Plan and RMP in this area.

- There are no known effects on the human environment that are highly

uncertain or involve unique or unknown risks. Actions have been performed in the past and have been evaluated in terms of past expectations and failures.

All air quality guidelines and State standards will be followed to reduce potential impacts to people who live in the area.

- The actions do not threaten a violation of Federal, State, or local law. Action alternatives will comply with air and water quality regulations (laws).

- Under the No Action Alternative, there will be no change to public health and safety. Appropriate precautions will be delivered to the public under the action alternatives. These include measures such as placement of warning signs, use of traffic control methods if needed, and dust abatement as required.

  Snags may represent a safety hazard during project operations. Where necessary, some snags may be felled for safety reasons. Where possible, replacement snags will be designated that do not constitute a safety hazard. This occurrence is expected to be the exception rather than the rule, as unit design has avoided this instance where foreseen.

  Dust abatement is required for safe operations and reducing sedimentation and loss of fines from road aggregate surfacing.

  Public safety during project activity is of utmost importance because of the use of the area by residents. Traffic controls such as the use of signs and flaggers will be used as necessary to promote public safety. Harvest and haul operations will be encouraged to use 2-way radios for communication to aid in public safety.

  Any use of the State Highway will require the purchase of a permit from the Oregon Department of Transportation.

  There are no known significant cumulative effects between this project and other projects implemented or planned on areas separated from the affected area of this project beyond those evaluated in the RMP or Chapter IV of the FEIS for the Forest Plan. Coordinating project options with the BLM enables management activities to occur at the same time.

- There are no known significant cumulative effects between this project and other projects implemented or planned on areas separated from the affected area of this project beyond those evaluated in Chapter IV of the FEIS for the Forest Plan. Planners attempted to link activities proposed under this project with adjacent ongoing analyses and projects to determine effects.

- The physical and biological effects are limited to this analysis area. Changes to wildlife patterns would likely not cause species to leave the general area.

Implementation of BMPs, designed to contain impacts to soil and water, limits the extent and duration of impacts.

- Based on public participation, the effects on the quality of the human environment are not likely to be highly controversial. However, specific effects to individuals will be incurred through presence of smoke, traffic conflicts, and other conflicts associated with implementation of the action alternatives.

- Biological evaluations were completed for the proposed action alternative (Alternative 2) for plants, fish, and wildlife species considered sensitive by the Forest Service and BLM, or proposed for listing as endangered or threatened. A summary of the effects of impacts to these species is included in the document. No threatened or endangered species are known to use the area. Activities may impact individuals or habitat of sensitive species, but will not likely contribute to a trend towards federal listing or cause a loss of viability to any population or species.

  Should any sensitive plants be discovered during project implementation, a botanist will be informed and protective measures taken (Contract Clause C6.25# or equivalent).

- This analysis includes the Blue Mountains Forest Health Report determinations in terms of insects and disease, watershed health, fire, long-term productivity, and biodiversity.

- This analysis acknowledges the importance of treaty rights on ceded lands for various tribes or individuals who may use this area and has provided protection for known uses. To date there may be uses associated with heritage sites, but there are no known religious sites currently in use, and no active grazing. Hunting, fishing, and plant/root gathering are impacted to the extent that the area may have reduced vehicle access during project operations. Historic changes (Columbia and Snake River dams) have reduced current fishing opportunities and subsequent uses of steelhead and salmon in religious or cultural ceremonies. No steelhead or salmon are known to use the streams in this area.

Bureau of Land Management Critical Elements

The BLM NEPA process requires consideration of "critical elements of the human environment." Many of these elements are addressed in the disclosures above or in the body of the EA (air quality, cultural resources, environmental justice, prime farm lands, floodplains, noxious weeds, Native American religious concerns, threatened or endangered species, water quality, and wetlands/riparian zones). The other critical elements are addressed below.

Areas of Critical Environmental Concern

These are specially designated areas with unique characteristics established through the Federal Land Policy and Management Act (FLPMA) and the Baker Resource Area RMP. None are within or adjacent to the analysis area.

Wastes, Hazardous or Solid

No hazardous or solid wastes are expected to be generated by any of the activities in this analysis. Contracts developed to implement the projects contain spill plans and other measures to prevent or contain incidents.

Wild and Scenic Rivers

There are no Wild/Scenic Rivers within or adjacent to the analysis area.

Wilderness

There are no designated Wildernesses or Wilderness Study Areas within or adjacent to the analysis area.

H. LIST OF PREPARERS

Joanne Britton, Environmental Coordinator	15 years NEPA, 25 years USFS
Bruce Countryman, Silviculturalist USFS	20 years Silviculture,
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Bill Tipton, USFS Pre-Sale Forester
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I. LIST OF AGENCIES, TRIBAL GOVERNMENTS, AND PERSONS RECEIVING A COPY OF THIS EA

Public Comment Copy

Lauren Buckley, The Ecology Center, Missoula, MT
Ryan Shaffer, Alliance for the Wild Rockies, Missoula, MT
Terry Shepherd, Confed. Tribes of the Umatilla Indian Reservation, Pendleton, OR
George Keister/Todd Callaway, Oregon Dept. of Fish and Wildlife, Baker City, OR
Leeanne Siart, Oregon Natural Resources Council, Eugene, OR
Brett Brownscombe, Hells Canyon Preservation Council, La Grande, OR
Keith Shollenberger, Oregon Department of Forestry, Baker City, OR
Chris Golightly, Columbia River Intertribal Fish Commission, Portland, OR
Mike Petersen, The Lands Council, Spokane, WA
Mary Callaway, Don Williams, Powder River Correctional Facility, Baker City, OR
Bill Marlowe, Baker City, OR
Forrest Walker, Baker City, Or
Xeno Cain, Baker City, OR
Raymond Read, Baker City, OR
Laurene Chapman, Baker City, OR

Comment and Response Copy

Forest Conservation Council (Santa Fe, NM)
Mike Petersen, The Lands Council, Spokane, WA
Lauren Buckley, The Ecology Center, Missoula, MT
National Forest Protection Alliance (Washington, DC)
Terry Shepherd, Confed. Tribes of the Umatilla Indian Reservation, Pendleton, OR
Doug Heiken, Oregon Natural Resources Council, Eugene, OR
Keith Shollenberger, Oregon Department of Forestry, Baker City, OR
George Keister/Todd Callaway, Oregon Dept. of Fish and Wildlife, Baker City, OR

FINDING OF NO SIGNIFICANT IMPACT

Stices Gulch Interface Project
Environmental Assessment OR-035-01-19

Baker Resource Area
Vale District
Bureau of Land Management
Baker City, Oregon

The Baker Resource Area of the Bureau of Land Management (BLM) Vale District, in conjunction with the Baker Ranger District of the Wallowa-Whitman National Forest of the United States Forest Service has analyzed a proposal for the Stices Gulch Interface Project. The proposed project sets forth land treatment activities designed to reduce fuel loadings, improve forest health and reduce the risk of wildfire to the residences and other structures in the Stices Gulch urban interface area while protecting other resource values. The attached Environmental Assessment (EA) OR-035-01-19 contains a detailed description and analysis of two action alternatives and a no action alternative. This EA was prepared under the guidance provided by the Baker Resource Management Plan Record of Decision (ROD)(July 1989).

On the basis of the information and analysis contained in the EA, I have determined that there will be no significant impacts resulting from the proposed action. In relation to context, the project's affected region is localized and the effects of implementation are limited to the area affected by the activity plan and the people inhabiting the area. This is particularly true in light of the comprehensive mitigation measures adopted into the project specifications. In relation to intensity or severity, said mitigation measures have been promulgated to protect public health and safety. Further, no unique characteristics are involved, there is no apparent controversy about the quality of the human environment, there are no highly uncertain, unique or unknown risks, and the project does not set a precedent for future actions that could have significant effects. The action also does not appear to be related to any other action that could be significant, there will be no impacts to sites that could be listed on the National Register of Historic Places, no scientific, cultural or historic resources will be lost, and there will be no violation of any law or requirement protecting the environment. There will be no significant impacts to any species listed under the Endangered Species Act.

The proposed action includes mitigation measures, derived during the course of effects analysis, that will reduce the potential environmental impacts of the proposed action. I have determined that, so long as these mitigation measures are followed, and monitoring procedures are utilized, implementation of the actions associated with the proposed project will not cause resource degradation. While any land management activity invariably and by definition entails environmental effects, I have determined, based upon the analysis of environmental impacts

contained in the referenced EA (OR-035-01-19), that the potential impacts raised by the proposed project will not be significant and that, therefore, preparation of an environmental impact statement is not required.

s/Penelope Dunn Woods — March 19, 2002

Penelope Dunn Woods — Date
Baker Field Manager
Baker Resource Area, Vale District